

EXHIBIT O

CONFIDENTIAL

Page 1

1 UNITED STATES DISTRICT COURT

2 WESTERN DISTRICT OF NEW YORK

3 -----X

4 CAROL S. MARCELLIN, individually, and as

5 Co-Administrator of the Estate of Charles E.

6 Hollowell, deceased, and JESSICA HOLLOWELL-McKAY,

7 as Co-Administrator of the Estate of Charles E.

8 Hollowell, deceased,

9 Plaintiffs,

10 -against-

11 HP, INC., and STAPLES, INC.,

12 Defendants.

13 -----X

14 Case No: 1:21-cv-00704-JLS

15 Job No: P1-6030025

16 -----X

17 Virtual Deposition

18 August 2, 2023

7:09 a.m.

19
20
21 EXAMINATION BEFORE TRIAL of HP, INC. by LEE

22 WARREN ATKINSON, a Defendant herein, taken by the

23 Plaintiff, held at the above-mentioned time and

24 place, before a Court Reporter and Notary Public of

25 the State of New York and New Jersey.

CONFIDENTIAL

Page 2

1 A P P E A R A N C E S:

2
3
4 FARACI LANGE, LLP
Attorneys for Plaintiffs
5 1882 South Winton Road - Suite 1
Rochester, New York 14618
6 BY: STEPHEN SCHWARZ, ESQ.
TEAGAN C. DOLAN, ESQ.
7 MATTHEW BELANGER, ESQ.
8

9 COUGHLIN & BETKE, LLP
Attorneys for Defendant
HP, INC.
10 175 Federal Street
Boston, Massachusetts 02110
11 BY: CHRISTOPHER G. BETKE, ESQ.
12

13 SMITH, SOVIK, KENDRICK & SUGNET, P.C.
Attorneys for Defendant
HP, INC.
14 6245 Sheridan Drive - Suite 218
Williamsville, New York 14221
15 BY: JACLYN S. WANEMAKER, ESQ.
16

17 PILLINGER, MILLER, TARALLO, LLP
Attorneys for Defendant
STAPLES, INC.
18 126 North Salina Street - Suite 215
Syracuse, New York 13202
19 BY: MARIA T. MASTRIANO, ESQ.
20
21
22

23 ALSO PRESENT:

24 Alexa Pastor - Videographer

25 Jessica Hollowell-McKay

CONFIDENTIAL

Page 3

I N D E X

WITNESS	EXAMINATION BY	PAGE
Lee Atkinson	Mr. Schwarz	8
	Ms. Mastriano	148

EXHIBITS

PLAINTIFF'S

EXHIBIT	DESCRIPTION	PAGE
1	Plaintiff's Notice of Rule 30(b)(6) Deposition of Defendant HP, Inc. (6 pages)	8
2	HP Expands Recall of Batteries for HP and Compaq Notebook Computers Due to Fire and Burn Hazards (5 pages)	8
3	6-Cell Battery Specification For MU09093 Bates Stamped HP01366 - HP01377 (12 pages)	8
4	Specifications for Approval Version A11 Bates Stamped HP01297 - HP01334 (38 pages)	8
5	Notebook PC User Guide Bates Stamped HP00053 - HP00181 (129 pages)	8
6	Color Photograph - Counterfeit Battery Circuit Board	8

(continued to next page)

CONFIDENTIAL

Page 4

I N D E X (CONTINUED)

EXHIBITS

PLAINTIFF'S

EXHIBIT	DESCRIPTION	PAGE
7	Color Photograph - Sample Battery Pack	8
8	Notebook Essentials	133
	Bates Stamped HP00182 - HP00233	
	(52 pages)	

CONFIDENTIAL

Page 5

F E D E R A L S T I P U L A T I O N S

IT IS HEREBY STIPULATED AND AGREED by
and between the attorneys for the
respective parties herein:

THAT the sealing, filing and
certification of the within deposition be
waived;

THAT such deposition may be signed and
sworn to before any officer authorized to
administer and oath, with the same force
and effect as if signed and sworn to before
the officer before whom said deposition is
taken.

IT IS FURTHER STIPULATED AND AGREED
that all objections, except as to form, are
reserved to the time of trial.

CONFIDENTIAL

Page 6

1 VIDEOGRAPHER: Good afternoon.

2 We are going on the record at 7:09 p.m.
3 on August 2nd, 2023.

4 Please note that this deposition is
5 being conducted virtually. The quality of
6 recording depends on the quality of camera
7 and internet connection of participants.
8 What is seen from the witness and heard on
9 screen is what will be recorded.

10 Video recording will continue to take
11 place unless all parties agree to go off
12 the record.

13 This is media unit number one of the
14 video recorded deposition of Lee Atkinson
15 taken by counsel for plaintiff in the
16 matter of Carol S. Marcellin, individually,
17 and as Co-Administrator of the Estate of
18 Charles E. Hollowell, deceased, and Jessica
19 Hollowell-McKay, as Co-Administrator of the
20 Estate of Charles E. Hollowell, deceased
21 versus HP, Inc. and Staples, Inc. Filed in
22 the United States District Court Western
23 District of New York. Case number
24 1:21-CV-00704-JLS.

25 My name is Alexa Pastor representing

CONFIDENTIAL

Page 7

1 Veritext and I am the videographer.

2 The court reporter is Eva Kaflinski
3 from the firm, Veritext.

4 I am not authorized to administer an
5 oath. I am not related to any party in
6 this action. Nor am I financially
7 interested in the outcome.

8 If there is any objections to
9 proceeding, please state them at the time
10 of your appearance.

11 Counsel, and all present including
12 remotely, will now state their appearances
13 and affiliations for the record, beginning
14 with the noticing attorney.

15 MR. SCHWARZ: Yes. Stephen Schwarz
16 from Faraci Lange. And with me, I have
17 Matthew Belanger and Tegan Dolan, also from
18 Faraci Lange.

19 And also participating and observing is
20 the plaintiff, Jessica Hollowell-McKay.

21 MS. MASTRIANO: I am Maria Mastriano
22 from the law firm of Pillinger, Miller and
23 Tarallo. And I represent Staples in this
24 action.

25 MS. WANEMAKER: I am Jacquelyn

CONFIDENTIAL

Page 8

1 Wanemaker from the law firm of Smith, Sovik
2 for Defendant, HP, Inc.

3 MR. BETKE: Chris Betke from Coughlin
4 and Betke. I am HP's national coordinated
5 counsel.

6 VIDEOGRAPHER: Will the court reporter,
7 please, swear in the witness, and then
8 counsel may proceed.

9 (Documents were pre-marked as
10 Plaintiff's Exhibit 1 through
11 Plaintiff's Exhibit 7 for
12 identification, as of this
13 date)

14 LEE WARREN ATKINSON,
15 after having first been duly sworn by a Notary
16 Public of the State of New York, was examined and
17 testified as follows:

18 EXAMINATION BY

19 MR. SCHWARZ:

20 Q State your name for the record.

21 A My name is Lee Warren Atkinson.

22 Q State your address for the record.

23 A 51-17 Ling Hang North Road, Zhongli
24 District, Jaoyuam.

25 Q Good morning, Mr. Atkinson.

CONFIDENTIAL

Page 9

1 My name is Steve Schwarz. I will be
2 asking you the majority of the questions today, I
3 believe. I represent the plaintiffs in this case.

4 And you are in the nation of Taiwan,
5 this morning in New York, but this evening in Taiwan,
6 correct?

7 A Yes.

8 Q You are currently an employee of HP?

9 A Yes.

10 Q Can you tell us what your position is
11 at HP at present?

12 A My title is distinguished technologist.

13 Q How long have you been employed by HP?

14 A Just over 35 years.

15 Q So, that would take us back to the late
16 1980s?

17 A Yes.

18 Q Could you review your educational
19 background for us?

20 A I am a bachelor of science in
21 electrical engineering from Texas A&M. Graduated in
22 1983.

23 Q Have you had any post graduate
24 education in the field of computers or engineering?

25 A No.

CONFIDENTIAL

Page 10

1 Q Prior to your --

2 When did you graduate from Texas A&M?

3 A May of 1983.

4 Q Were you employed anywhere from the
5 time you graduated and the time you started with HP?

6 A Yes.

7 Q Where was that?

8 A Texas Instruments.

9 Q Were you continuously employed at Texas
10 Instruments until you started at HP?

11 A Yes.

12 Q What area of work -- initial job at
13 Texas Instruments?

14 In other words, what was your job
15 description? What did you do?

16 A My job title was product engineer.

17 Q What types of products did you work on
18 at Texas Instruments?

19 A Semiconductors. Specifically,
20 microprocessors.

21 Q Just as a definition, is there a
22 difference between integrated circuits and
23 microprocessors or are they synonyms?

24 A An integrated circuit is a broader
25 classification of a single chip. Microprocessor is

CONFIDENTIAL

Page 11

1 just one embodiment of an integrated circuit.

2 Q Have you ever testified at a deposition
3 prior to today?

4 A Yes.

5 Q Approximately how many times?

6 A Maybe somewhere between 10 and 15
7 times.

8 Q What were the --

9 What was the subject matter of the
10 cases you testified in, if you can recall them, and
11 summarize them for us?

12 A For HP, it's been either usually IP
13 defense, IP issues, or some battery cases. Some
14 insurance cases.

15 Q Okay.

16 So, IP would be intellectual property
17 that would involve either patents or some challenge
18 to patents; is that correct?

19 A Yes.

20 Q With regard to the battery cases, how
21 many battery -- alleged battery defect cases have you
22 testified in?

23 A Related to battery, maybe about four or
24 five maybe.

25 Q Do you recall the names of any of those

CONFIDENTIAL

Page 12

1 cases?

2 A Gopel Ratnum.

3 Q Could you spell that?

4 A I will try. I think it's G-O-P-E-L
5 R-A-T-N-U-M.

6 The second is Critser, C-R-I-T-S-E-R.

7 The third, I can't remember the name
8 for the third.

9 Q How about the fourth?

10 A That, I can't remember either.

11 I'm trying to even visualize when that
12 was.

13 Q The first one you mentioned, do you
14 recall what jurisdiction that was in?

15 A No, I don't know.

16 Q Do you recall what the allegations in
17 that case were?

18 A There was a fire with a laptop.

19 Q Fire with a laptop?

20 A A fire in the room.

21 Q Was it alleged that it was caused by a
22 battery failure?

23 A Yes, I think so.

24 Q And what about the Critser case, the
25 second case?

CONFIDENTIAL

Page 13

1 Was that a similar fire battery failure
2 case?

3 A Yes, similar type of case.

4 Q The two that you can't remember the
5 names of, are they also battery failure cases
6 alleged?

7 A Yes.

8 Q Resulting in fires?

9 A I can't remember. In fact, I can't
10 remember for sure.

11 Q Do you recall what any of the other
12 jurisdictions of the cases were, were venued?

13 A No. No.

14 Q In the cases that you've testified, at
15 least four battery cases, were you put forward as a
16 witness for HP as a 30(b)(6) witness as we refer to
17 it in law?

18 A Yes.

19 Q So, you are familiar with your role as
20 a rule 30(b)(6) witness for HP?

21 A Yes.

22 Q I see that you have a number of patents
23 in your name that you hold; is that correct?

24 A Yes.

25 Q One of those patents is for a computing

CONFIDENTIAL

Page 14

1 device powered management; is that correct?

2 A I have several related to power
3 management, yes.

4 Q Can you tell us what aspects of
5 computer power management you got patents, if you can
6 generally describe that?

7 A Since the early '90s, I have many
8 patents on power management and also thermal
9 management. Many subsections of the computer, I have
10 patents on.

11 Q Is your --
12 You said power management and thermal
13 management?

14 A Yes.

15 Q That would be obviously management of
16 the heat that is produced by a computer?

17 A Correct.

18 Q Do any of those patents involve the
19 battery pack of computers?

20 A I think one of them does.

21 Q Can you tell us about that particular
22 patent and how it involved the battery pack?

23 A It's a battery pack improvement and how
24 to package the battery so that the cells will be
25 cooled when it's run at a high current.

CONFIDENTIAL

Page 15

1 Q When did you obtain that particular
2 patent?

3 A I don't know when it was granted. I
4 think I worked on it around 2006.

5 Q Are you currently an officer or
6 director of the HP?

7 A No.

8 Q Now, I am going to share the screen at
9 this moment.

10 Can you see what is up on the screen
11 right now, and I marked as Exhibit 1?

12 A Yes.

13 Q This is --

14 I will represent for the record, the
15 Plaintiff's Notice of Rule 30(b)(6) Deposition of
16 Defendant, HP, Inc. And it's a six-page document.

17 Do you have a copy of it in front of
18 you?

19 A I don't have a copy of it in front of
20 me, no.

21 Q Have you seen this document prior to
22 today?

23 A Yes.

24 Q Have you --

25 If you could, I am going to scroll down

CONFIDENTIAL

Page 16

1 to page 5 of this document.

2 Beginning on page 5, carrying over to
3 page 6, there are six topics listed.

4 Are you familiar or have you reviewed
5 those topics?

6 A Yes.

7 Q Are you prepared, on behalf of HP, to
8 answer questions regarding each of these seven
9 topics?

10 A Yes.

11 Q Are you --

12 Do you understand that pursuant to the
13 rules or any of these topics that you don't have
14 personal knowledge you were required to educate
15 yourself in order to provide answers on behalf of HP
16 about each topic?

17 A Yes.

18 Q I am going to start --

19 The first area of questioning I want to
20 ask you about is actually topic two.

21 And I have that up on the screen right
22 now.

23 Do you see that?

24 It's the:

25 "Design and function of the battery

CONFIDENTIAL

Page 17

1 management system in the original battery
2 pack sold with the laptop including
3 connections to the motherboard."

4 Do you see that?

5 A Yes.

6 Q In this document, we also provided
7 definitions for each of the bolded items.

8 And you understand what those bolded
9 items refer to based on those definitions?

10 A Yes, I think so.

11 Q So, the laptop is the HP Pavilion.
12 That's the subject matter of this
13 litigation.

14 Do you understand that?

15 A Yes.

16 Q And do you understand what a Battery
17 Management System is, correct?

18 A Yes.

19 Q What would your definition be of a
20 Battery Management System?

21 A My definition would be the circuitry
22 that interfaces the battery cells to the notebook.

23 Q So, for particular devices, including
24 notebook computers, batteries are packaged with its
25 own circuitry that provides certain functions,

CONFIDENTIAL

Page 18

1 correct?

2 A Yes. For this notebook, yes.

3 Q And that entire package is referred to
4 as a battery pack?

5 A Yes.

6 Q And in that battery pack, there is
7 certain circuitry and there are also cells?

8 A Correct.

9 Q The cells are the actual batteries.
10 The circuitry is -- provides some
11 function with regard to the use of those batteries,
12 correct?

13 A Correct.

14 Q Now, with regard to topic two, did
15 anything from your work experience with HP provide
16 you with knowledge related to this topic?

17 A I'm acquainted with this topic, yes.

18 Q In other words, is this part of your
19 general work area job description at HP or was it at
20 some period of time?

21 A Yes.

22 Q Tell us about your role in design and
23 function of Battery Management Systems in your
24 regular work experience at HP?

25 A Because my job has focus especially on

CONFIDENTIAL

Page 19

1 power management and performance management for the
2 notebook, the integration of the battery is a
3 critical part.

4 Q In addition to your personal experience
5 then with this topic, and with regard particularly to
6 the make and model HP Pavilion Series laptop that's
7 involved in this case, did you do any additional
8 preparation to answer the questions related to this
9 topic?

10 A Yes.

11 Q Did you review any documents?

12 A Yes.

13 Q What documents did you review?

14 A Especially the HP specification for the
15 battery. And also, the LG specification for the
16 battery.

17 Q I have those two. We are going to look
18 at those later today.

19 Did you review any other documents
20 related to topic number two to help you prepare to
21 answer questions about this topic?

22 A I looked at the schematic for the
23 notebook.

24 Q Can you identify that document in any
25 way by either a document number or a specification

CONFIDENTIAL

Page 20

1 number?

2 A I didn't bring my index of the Bates
3 numbers. I think for the LG spec, I remember that
4 being 1297. But I don't remember what the Bates
5 number was for the schematic.

6 Q Okay.

7 But you believe that that's --

8 MR. BETKE: Excuse me for one second.
9 I might be able to provide that.

10 MR. SCHWARZ: Sure.

11 MR. BETKE: I think the schematic for
12 the notebook is 0483 to 530.

13 MR. SCHWARZ: Thank you.

14 COURT REPORTER: And who was saying
15 that? It's not showing up who is talking
16 on my screen, Alexa.

17 MR. BETKE: That was Chris Betke.

18 COURT REPORTER: Okay. One second.

19 Alexa, are you there?

20 VIDEOGRAPHER: Yes.

21 (Whereupon, a discussion was held off
22 the record)

23 Q Other than reviewing documents and
24 other than talking to any of the attorneys who
25 prepared you, did you do anything else to prepare

CONFIDENTIAL

Page 21

1 yourself for topic number two to answer questions
2 about that topic?

3 A No.

4 Q So, did you speak to any other
5 employees of HP to gain any information that you
6 didn't have that you couldn't get from the documents?

7 A No, not for topic two for certain.

8 Q I want to show you what I marked as
9 Exhibit 2.

10 MR. SCHWARZ: And all of these --

11 Counsel, all of these exhibits are in
12 the Exhibit Share folder. So, you have
13 access to them at any time in addition to
14 what is on the screen.

15 (Whereupon, a discussion was held off
16 the record)

17 Q Do you recognize this document that I
18 marked as Exhibit 2, Mr. Atkinson?

19 A I don't recognize it. I don't know if
20 I ever seen it before.

21 Q Are you aware of what the United States
22 Consumer Product Safety Commission is?

23 A I heard of it.

24 Q Are you aware of recalls that have been
25 put out by your company to recall batteries from HP

CONFIDENTIAL

Page 22

1 and compact notebook computers due to fire and burn
2 hazards?

3 A I am only vaguely aware of recalls.

4 MR. BETKE: Hey, Steve. What category
5 is this for the depo notice?

6 MR. SCHWARZ: This is part of the
7 background for topic two.

8 COURT REPORTER: I'm sorry.

9 Who was saying that?

10 MR. BETKE: The topic doesn't say
11 anything.

12 MR. SCHWARZ: -- battery fires and
13 that's part of.

14 MR. BETKE: Hang on. Hang on. Let me
15 get the notice in front of me.

16 COURT REPORTER: Who is talking right
17 now?

18 MR. SCHWARZ: You can object, but I
19 don't think we can delay the deposition.

20 MR. BETKE: I want to follow along.
21 Category two, I have. There is only a
22 function of an BMS including the original
23 battery pack sold with the laptop including
24 connections with the motherboard.

25 MR. SCHWARZ: Yes, that's -- this is a

CONFIDENTIAL

Page 23

1 background issue with regard to that topic.

2 And you can object and say that you
3 don't believe it's within the topic and
4 that's your objection and then we can move
5 forward.

6 MR. BETKE: So, okay. So, Lee is here.
7 I will allow you to explore his personal
8 knowledge.

9 But it is my objection that he is not
10 here to testify as a 30 (b)(6) deponent
11 with respect to other battery packs and
12 potential recalls regarding same.

13 Why don't you ask him what he knows
14 about it, and he'll answer, but we object
15 to this being a 30 (b)(6) question.

16 MR. SCHWARZ: I understand that.

17 Thank you for your objection.

18 COURT REPORTER: This is the court
19 reporter.

20 MR. SCHWARZ: I'm sorry. The court
21 reporter is going to stop again.

22 Go ahead.

23 COURT REPORTER: Yes.

24 I don't know who was speaking in the
25 colloquy.

CONFIDENTIAL

Page 24

1 MR. BETKE: That was the great Chris
2 Betke.

3 COURT REPORTER: Okay.

4 I need for you to have the camera on.

5 MR. BETKE: Listen, I couldn't find the
6 button, ma'am. Okay? I couldn't find the
7 button to do it.

8 (Whereupon, a discussion was held off
9 the record)

10 Q The question I want to ask you about
11 this is that the hazard listed here is:

12 "The lithium-ion batteries used in
13 notebook computers can overheat, posing
14 fire and burn hazards."

15 And my question to you, Mr. Atkinson,
16 were you aware of this particular potential hazard
17 of lithium-ion batteries that were included in
18 laptop computers?

19 A Your question is do I -- am I aware
20 that a lithium-ion battery can lead to a fire or burn
21 hazard? The answer is yes.

22 Q Okay.

23 A I don't know this specific report or
24 this specific battery. And I am not involved in
25 recalls.

CONFIDENTIAL

Page 25

1 Q Thank you. That's all I had to ask you
2 about that on that.

3 And are you familiar with a term called
4 thermal runaway when it refers to lithium-ion
5 batteries?

6 A It's a vague term. I am not sure what
7 some of it specifically means from it.

8 Q Well, do you understand that the
9 organic electro light and lithium-ion batteries can
10 be flammable under certain circumstances?

11 MR. BETKE: Same objection on the
12 30(b)(6), but I will let Lee testify as to
13 his personal knowledge.

14 A Yes.

15 Q Are you familiar with a phenomena that
16 lithium-ion cells can enter uncontrollable
17 self-heating space?

18 A I am not aware of the specific
19 mechanisms for those, but I am, of course, aware that
20 the battery can catch on fire.

21 Q Now, I want to move on to what I marked
22 as Exhibit 3.

23 And I believe this is one of the
24 documents that you indicated you had reviewed in
25 preparation for the deposition.

CONFIDENTIAL

Page 26

1 MS. WANEMAKER: Can you just scroll
2 down so I can see the Bates number on that,
3 please? Thank you.

4 MR. SCHWARZ: It begins with HP 01366
5 and goes to 1377.

6 A Yes.

7 MR. SCHWARZ: And this is available to
8 the attorneys on Exhibit Share. All of
9 these exhibits are, so. You can look at
10 them any --

11 MR. BETKE: Where is that?

12 MR. SCHWARZ: -- time.

13 MR. BETKE: Where is that?

14 MR. SCHWARZ: Exhibit Share is one of
15 the features that's offered by Veritext and
16 it was provided to you in several e-mails
17 that were sent to you.

18 MR. BETKE: It's not on the screen.

19 MR. SCHWARZ: No. It's a separate --

20 You log in separately to the Veritext
21 website and you get Exhibit Share provided
22 by Veritext. And instructions were
23 provided in advance by several e-mails.

24 Q Is this, again, Mr. Atkinson, a
25 document that you reviewed prior to today?

CONFIDENTIAL

Page 27

1 A Yes.

2 Q Can you describe what this document is?

3 A This is the HP specification for a
4 9-cell pack that was an option for this notebook.

5 MR. BETKE: Lee, I think you said 9.

6 This is 6.

7 THE WITNESS: This is a --

8 The 6-cell is obviously a typo. This
9 is a 9-cell. I am looking at the MU09093.

10 This is a 9-cell battery.

11 Q Okay.

12 A It is an extended capacity battery that
13 was an option in this family of batteries.

14 Q So, with regard to the HP Pavilion
15 laptop at issue in this case, there were several
16 different battery options that would work with the
17 system?

18 A That's correct.

19 Q And you are saying that one of them was
20 a 6-cell option and another was a 3-cell option?

21 A There were --

22 Q I'm sorry --

23 A There were three different options for
24 6-cell batteries. And one 9-cell battery. Not
25 counting the variations of pack manufacturer and

CONFIDENTIAL

Page 28

1 cells for each.

2 Q Now, with regard to --

3 Is there a similar document that you
4 reviewed that provides a specification for the 6-cell
5 batteries?

6 A Yes.

7 Q And what do you recall that
8 specification being numbered?

9 A It was titled MU06055.

10 Q Thank you.

11 I want to just go down.

12 Section 2.4 refers to fuel gauge
13 specifications.

14 Do you see that?

15 A Yes.

16 Q Are the fuel gauge specifications for
17 the different types of battery packs for this
18 Pavilion the same or different?

19 A I am sorry.

20 Would you ask the question again,
21 please?

22 Q I am asking you are the fuel gauge
23 specifications for the different battery packs that
24 were approved for this Pavilion laptop computer, are
25 they the same or different based upon the different

CONFIDENTIAL

Page 29

1 number of cells?

2 A They were not --

3 There were multiple approved battery
4 gauges for each of these battery packs. So, these
5 are the -- these are the available -- these were the
6 approved battery controllers for the 9-cell pack.
7 The 6-cell might include others. Each specification
8 is going to be slightly different.

9 Q Let's start with what is a fuel gauge
10 for a battery pack like this?

11 What does that mean?

12 A Fuel gauge -- the meaning of a fuel
13 gauge is especially to measure the energy in and out
14 of the battery cell so that it would provide, just as
15 a car, a fuel gauge.

16 The other function of the battery fuel
17 gauge is to direct the charge and discharge.

18 Lastly, provide the safety features for
19 the battery pack.

20 Q So, the fuel gauge provides the ability
21 to communicate with the laptop itself to indicate how
22 much charge is left on the battery, is one thing it
23 does, correct?

24 A That's one thing, correct. Yes.

25 Q And another thing it does is provide

CONFIDENTIAL

Page 30

1 some of the safety features that keep the battery
2 from malfunctioning?

3 A It's -- yes. It provides some of the
4 safety features for the battery pack, yes.

5 Q So, as we go down here on this Exhibit
6 3, there are -- underneath 2.4.1, there is a number
7 of approved fuel gauges for this particular battery
8 pack. And these are basically different
9 manufacturers that have --

10 Are these microprocessors or integrated
11 circuits that are here?

12 A These are integrated circuits that have
13 some microprocessors features, correct.

14 Q So, the ones that begin with BQ are of
15 the brand from Texas Instruments that provide these
16 fuel gauge functions that you've described?

17 A Correct.

18 Q And then, there is also one from Maxim
19 and from --

20 And I am not sure how to pronounce
21 that.

22 Renesas?

23 A Renesas.

24 Q Renesas. Okay.

25 And all of those are for this

CONFIDENTIAL

Page 31

1 particular 9-cell battery pack were integrated
2 circuits that provide these functions that HP
3 requires for its battery packs for this particular
4 laptop line?

5 A Yes.

6 Q And then, under 2.5, it indicates:
7 "Temperature Sense Capability. The
8 battery pack shall have a temperature
9 sensor thermistor. The thermistor shall be
10 placed between adjacent cells for more
11 accurate sensing."

12 Is this a safety function to allow the
13 battery pack to sense the actual temperature of the
14 batteries as they are operating?

15 A This is to sense the temperature of the
16 battery cells. That's correct.

17 Q And is that function then provided for
18 in the integrated circuit that is provided with the
19 fuel gauge?

20 A The temperature sensor is connected to
21 the IC. It is connected to the fuel gauge chips.

22 Q So, the sensor is a separate device but
23 it's connected and communicates with the integrated
24 circuit?

25 A Correct.

CONFIDENTIAL

Page 32

1 Q And it provides the information about
2 the temperature of the battery cells to the
3 integrated circuit?

4 A Correct.

5 Q And then, 2.6 indicates that there are
6 safety functions.

7 It says:

8 "The battery pack shall be built with
9 the following safety protection functions."

10 And the first one is:

11 "Overcharge/discharge."

12 Did I read that correctly?

13 A Yes.

14 Q And what does that refer to,
15 overcharge/discharge?

16 A Overcharge, undercharge, over current,
17 the temperature, these are all monitored by the fuel
18 gauge. And so, when there -- when there are
19 boundaries that are exceeded in any of these, they
20 are detected by the fuel gauge or there is also
21 another chip that performs a backup. A backup to the
22 fuel gauge. But these are -- these are sensed by the
23 fuel gauge.

24 Q What is the phrase "overcharge" mean?

25 A Overcharge -- or it means an over

CONFIDENTIAL

Page 33

1 voltage of the cell.

2 Q And then, also listed here is current.

3 And you mentioned current.

4 So, voltage is different than current,
5 correct?

6 A Correct.

7 Q Tell me what the difference is between
8 voltage and current generally just as an electrical
9 engineer?

10 A We give analogies to water. A current
11 is like a flow of a river -- a current is a flow of a
12 river compared to the flow of the --

13 So, a current is how much flow of
14 energy is. Voltage is the potential of the -- that
15 the flow occurs at.

16 Q So, the integrated circuit that would
17 be provided with the fuel gauge itself would measure
18 instances where there is too much current going into
19 the battery pack?

20 A Yes. Both into or out of a battery
21 pack.

22 Q And then, there is a phrase "over
23 temperature."

24 And I assume that would mean that
25 temperature exceeds some threshold which would be

CONFIDENTIAL

Page 34

1 over what it should be?

2 A Yes.

3 Q And is that what the thermistor is
4 designed to provide that information to the
5 integrated circuit?

6 A Yes.

7 Q And then, it also is supposed to detect
8 reverse charge.

9 Can you explain what that means?

10 A Reverse -- I am sorry.

11 Reverse charge would be a negative
12 current. So, if the pins were somehow reversed, if
13 there was a reversal of current, it would detect
14 that.

15 Q Next listed item is cell imbalance.

16 Can you explain what that means?

17 A Cell imbalance is a comparison of the
18 different voltages that are put in series
19 configuration. The cell balances an independent
20 measurement of each individual cell. In this case,
21 the cell pair.

22 Q Now, you indicated that there were
23 several different approved battery pack designs.

24 Some were 6-cell and some were 9-cell,
25 correct?

CONFIDENTIAL

Page 35

1 A Correct.

2 Q And why is it important that when
3 charging a multi-cell battery pack, that the cells
4 are in balance?

5 A It's important to avoid over voltaging
6 any one cell. Individual -- individual cells must be
7 measured.

8 I say individual. In the case of the
9 6-cell or 9-cell, we have basically three cells in
10 series. So, each group of series cells must be
11 monitored for voltage so they do not exceed the rated
12 voltage.

13 Q What is the risk if the cells become
14 imbalanced?

15 A If a cell is -- if a cell is
16 overcharged -- meaning, if the voltage is higher than
17 it was rated at -- it might have risk of damaging the
18 cell.

19 Q What about overheating?

20 A At a high enough voltage, yes. When
21 it's a high voltage, it can cause some damage to the
22 cell and I suppose that would lead to a mechanism
23 that would cause overheating.

24 Q And then, the last safety function item
25 that fuel gauge is required to possess is a short

CONFIDENTIAL

Page 36

1 circuit protection.

2 Can you describe what that is for me?

3 A A short circuit protection is to make
4 sure that if the battery has a fast output discharge
5 that can -- this is to detect the output current is
6 higher than expected.

7 Q And what is the risk of that if that
8 occurs?

9 What is the risk even to the battery
10 pack or to the laptop itself?

11 A It only indicates that there is
12 something that is out of operation and it's just a --
13 I am not sure that it provides any certain or -- that
14 provides any risks to the battery pack.

15 Q Do you have any understanding of why
16 it's listed as a safety function if it doesn't
17 provide some safety feature?

18 A Normally, over occurrence -- the
19 current would be to prevent perhaps the ignition of
20 an external short circuit. Not necessarily for the
21 battery pack itself.

22 Q Thank you.

23 And if you turn to the second page of
24 this document, which is HP01367, do you see the chart
25 that's in the middle of the page there?

CONFIDENTIAL

Page 37

1 A The 3.2 battery connector pinout?

2 Q Yes.

3 A Yes, I see it.

4 MR. BETKE: Hey, Steve. Just I meant
5 to say this at the beginning.

6 We are designating since we are going
7 into so much technical information about
8 the HP product, we are designating this
9 deposition as confidential under the
10 protective order.

11 MR. SCHWARZ: Yes, I understand that.

12 And these documents are marked
13 confidential. And we will abide by that.

14 And that was Chris Betke that made that
15 statement.

16 MR. BETKE: Yes. I had my video on
17 though, too.

18 MR. SCHWARZ: Okay. Thank you.

19 Q Mr. Atkinson, what does this battery
20 connector pinout table --

21 What information does that provide
22 generally?

23 A These are the signal connections from
24 the battery pack to the motherboard. The notebook
25 motherboard.

CONFIDENTIAL

Page 38

1 Q In other words, in order for a battery
2 pack to work in this particular laptop computer, it
3 would have to have these pins and these
4 configurations to match up with the connection on the
5 motherboard of the computer so that the two can
6 function together; is that correct?

7 A That's correct.

8 Q So, one and two and seven and eight
9 appear to be the connections -- actually, the
10 positive and negative connections -- between the
11 battery and the motherboard?

12 A Correct.

13 Q And that would be similar
14 simplistically to the plus and the minus side of a
15 battery that we are familiar with in our daily lives
16 that we might use for a smoke detector or something
17 like that?

18 A Yes.

19 Q And pin number 3 refers to something
20 called an SMD or SMBus data interface I/O pin.

21 Do you see that?

22 A Yes.

23 Q Now, can you define for us what an
24 SMBus interface is?

25 A SMBus is a communications interface

CONFIDENTIAL

Page 39

1 between the notebook motherboard and the battery
2 pack.

3 Q So, in other words, the motherboard and
4 the battery pack have to communicate certain
5 information. And some of the information we already
6 talked about, right? The information about how much
7 charge is left in the battery has to be communicated
8 to the motherboard so that it could be displayed to
9 the user.

10 Correct?

11 A Correct.

12 Q And other information that we already
13 talked about, too, would be communicated to the
14 motherboard through this SMBus, right?

15 A Correct.

16 Q Now, there appear to be two SMBus
17 connections on this particular diagram. One for the
18 data interface and one for the clock interface.

19 Could you describe the difference
20 between those two?

21 A Both are essential for this serial
22 interface. One is the clock interface that tells you
23 when to sample data. The SMBus is a standard
24 interface. And so, the clock is something that just
25 sequences each bit of information one at a time

CONFIDENTIAL

Page 40

1 communicated through the data pin.

2 Q So, let me break that down and see if I
3 understand it.

4 We talked about various different
5 pieces of information that have to be communicated
6 between the battery pack and the motherboard.

7 And the third pin there, the SMBus data
8 interface, is where that data is transmitted. But
9 since there are multiple different types of data that
10 have to be transmitted, the second pin controls the
11 sequence by which that data is transmitted to the
12 motherboard?

13 A The data is serialized because there is
14 only one data line. It is a one or a zero. And so,
15 to construct any kind of communication, we structured
16 in addresses and data. Then, so, each of those
17 addresses and data are communicated one bit at a
18 time. The clock is the one that -- and tells when
19 the next single piece of data -- that each single bit
20 is present and ready to be transferred in that
21 process.

22 Q Okay. I think I understand that. And
23 to the extent I don't, I probably won't find out --
24 won't be able to understand even if I ask you 12 more
25 questions so I am going to just move on from that.

CONFIDENTIAL

Page 41

1 Pin number 5 is listed as ID and open.

2 Could you describe what that means?

3 A I have to look at the schematic to
4 understand what that means. If that was used at all.
5 If that was used at all in the circuit.

6 Q So, at this point, you can't answer
7 that question?

8 A Open indicates that it was not
9 connected, whether it was a -- whether it was a --
10 but I would have to verify that by looking at the
11 schematic to be absolutely sure.

12 Q So, the term, though, "open" to you
13 just looking at Exhibit 3 would be an indication that
14 pin 5 would serve no purpose at this point unless you
15 can find something on the schematic that changes your
16 mind on that?

17 A That's correct. I can't think of
18 what we would need the pin for. That's correct.

19 Q Okay.

20 And pin number 6, it says:

21 "Connect to thermistor."

22 And we talked about the thermistor as
23 being the device that measures the temperature of
24 the battery cells, correct?

25 A Correct.

CONFIDENTIAL

Page 42

1 Q And is that information then
2 transmitted to the motherboard through pin number 6?

3 A Yes.

4 There were two thermistors. One of
5 them is -- this is standard for the smart battery
6 standard. But this -- that this one follows. That
7 this pack follows. There is one that connects to the
8 integrated fuel gauge and another one goes to the
9 system motherboard.

10 Q So, they basically are --

11 It is a redundant for this thermistor
12 then?

13 A Correct.

14 Q So, let me just dig down into that.

15 You mentioned something. I want to go
16 back to page one of Exhibit 3.

17 And under the fuel gauge -- let me just
18 blow that up a little bit.

19 You mentioned this smart battery data
20 specification revision 1.1.

21 Do you see that?

22 A Yes.

23 Q Can you describe what that is, what
24 that particular document represents, and how it's
25 used by HP?

CONFIDENTIAL

Page 43

1 A The smart battery standard was made in
2 the late '90s. I somehow remember this. 1998. The
3 smart battery standard is a standard form of data and
4 communication between the battery pack and then to
5 the motherboard.

6 Q And so, if I can just generalize that.
7 Is it true that the industry, in a
8 sense, both the battery manufacturers and the device
9 manufacturers, kind of got together to try to
10 standardize things with regard to these lithium-ion
11 batteries for different electronic devices that they
12 can power?

13 A Yes, that's correct.

14 Q And so, this smart battery data
15 specification, is that the outcome of an effort to
16 provide some standardization in the field of
17 lithium-ion batteries for these types of electronic
18 devices?

19 A Yes, that's correct.

20 Q And that assisted both the
21 manufacturers of the devices and the manufacturers of
22 the batteries to be on the same page with regard to
23 different features that would be expected to be in
24 these battery packs?

25 A Correct.

CONFIDENTIAL

Page 44

1 Q And some of the things that we talked
2 about today already would be -- of these battery
3 packs are also discussed in that smart battery data
4 specification, correct?

5 A I can't remember if they speak to
6 safety -- speak to safety features. I can't remember
7 that it's in the smart battery pack.

8 Q Okay.

9 So, let me go back to the second page
10 of Exhibit 3 then.

11 And we were talking about the connect
12 to thermistor pin number 6.

13 And I just wanted to reiterate that
14 with regard to the fuel gauge, which was the
15 integrated circuit that was required for these
16 battery packs, there is one circuit that is connected
17 to a thermistor that goes to the integrated circuit,
18 correct?

19 A Correct.

20 Q And --

21 A To the fuel gauge inside the battery
22 pack. That's correct.

23 Q And if the thermistor that's connected
24 to the fuel gauge registers a temperature out of
25 range of acceptable, is information then transmitted

CONFIDENTIAL

Page 45

1 to the motherboard through the pin number 3 SMD data
2 interface?

3 A It can be -- I'm sorry. Yes. It would
4 be accessed through -- yes. It can be read from the
5 host.

6 Q And the host --

7 A The temperature can be read by the
8 motherboard through the SMBus data to the fuel gauge.
9 That's correct.

10 Q And then pin number 6 is a direct
11 connection from the thermistor -- from a thermistor
12 to the motherboard?

13 A Yes.

14 Q And is that a different thermistor --
15 connected to the integrated circuit?

16 A It's the second thermistor, yes.

17 Q So, there are basically two
18 thermistors.

19 And you have a redundant system so that
20 if the temperature gets above a certain temperature,
21 the motherboard is directly -- has provided that
22 information directly and it's also provided that
23 information through the integrated circuit from the
24 fuel gauge?

25 A Yes.

CONFIDENTIAL

Page 46

1 Q And is that a standard configuration
2 for the battery packs for both of the 6-cell and the
3 9-cell?

4 A That's a standard for the
5 specifications, yes.

6 Q I want to turn to page 3, which is HP
7 1368. This is a chart in Exhibit 3.

8 And it talks about number 10 is
9 identified as allowable temperature range.

10 Do you see that?

11 A Yes.

12 Q And the allowable temperature range for
13 charge initial temperature and continuous charging is
14 between zero celsius and approximately 45 degrees
15 celsius, correct?

16 A Yes.

17 Q So, what it seems to be saying here is
18 that the temperature of the battery cells should not
19 exceed 45 degrees celsius during either of those
20 charging conditions?

21 A Correct.

22 Q I am now going to go to page HP 01371
23 of Exhibit 3.

24 And particularly item number nine on
25 that list. It's entitled, "Over-temp protection for

CONFIDENTIAL

Page 47

1 charge."

2 Can you identify or describe what that
3 means?

4 A Yes. Number nine, it says when over 46
5 degrees for more than two seconds, it turns off the
6 C-FET. C-FET means charge set. So, current into the
7 battery pack is interrupted.

8 Q So, a FET is a field-effect transistor,
9 correct?

10 A Correct.

11 Q And so, that is sort of an on/off
12 switch that's available to cut the current to the
13 battery in the event that the battery gets above 46
14 degrees celsius?

15 A That's correct.

16 Q Now, we talked about there being two
17 different thermistors that are in the battery pack
18 that are available to communicate information to the
19 motherboard about the temperature of the cells.

20 Does this refer to both of those or
21 just one of those?

22 A This refers to -- this control of the
23 charge -- solely by the fuel gauge I see. It's not
24 directly by the motherboard. So, this is -- this is
25 controlled by the fuel gauge chip.

CONFIDENTIAL

Page 48

1 Q So, the fuel gauge chip then is
2 programmed so that if the thermistor transmits
3 information that is 46 degrees or higher, it will
4 turn off the power charge in the battery
5 automatically?

6 A Yes. The battery pack will turn itself
7 off. The fuel gauge chip will do this automatically.

8 Q Now, I am going to ask you a different
9 hypothetical.

10 What if the pin to the motherboard that
11 gets information on the thermistor receives
12 information that the temperature is above 46 degrees
13 celsius, is the motherboard programmed in some way to
14 also shut off power to the battery pack?

15 A I don't know.

16 Q You don't know?

17 A I only -- I can only be sure that it
18 will -- that the imbedded controller -- the imbedded
19 controller is on the system motherboard and that
20 would detect. Before it starts to -- before it
21 starts to charge, it will read that then, but I don't
22 know if it will continue to monitor through that pin.

23 Q So, let me see if I can break that
24 down.

25 It's your understanding that the pin

CONFIDENTIAL

Page 49

1 that provides a direct connection between the
2 thermistor and the motherboard provides information
3 on the initial temperature of the battery pack when
4 charging begins?

5 A Yes.

6 Q And let me just ask you in this
7 hypothetical.

8 What if the temperature at the initial
9 charging state is above 46 degrees celsius?

10 What, if anything, can the motherboard
11 do under those circumstances?

12 A The motherboard will not initiate
13 charge.

14 Q So, how does the motherboard accomplish
15 that process of not initiating the charge?

16 A I can't remember. I can't remember if
17 it looks at the SMBus data or if it does it -- I'm
18 sorry -- independently.

19 Q My question again, and this is all
20 within topic, too.

21 My question is does the motherboard
22 have some control over the current coming into the
23 battery pack directly?

24 A Yes.

25 Q And how is that accomplished?

CONFIDENTIAL

Page 50

1 A The motherboard -- the integrated
2 imbedded controller on the motherboard side will
3 relay information from the battery pack through the
4 charger. So, the imbedded controller is relaying the
5 request through the charger from the battery pack to
6 the charging IC.

7 And in this case, the fuel gauge will
8 not request --

9 If a fuel gauge detects that it's over
10 46 degrees, the fuel gauge, itself, will not request
11 that. It will not request the charge.

12 Q I think we are talking past each other
13 or maybe I am just not understanding.

14 I understand that the fuel gauge has
15 the capacity to turn off the C-FET -- C dash F-E-T --
16 which will stop the power coming into the battery
17 pack if the temperature is exceeded in the thermistor
18 that is connected to the fuel gauge, correct?

19 A Correct.

20 Q If the temperature is exceeded in the
21 thermistor connected to the motherboard, I am trying
22 to understand does the motherboard then have to shut
23 the C-FET off through the fuel gauge or is there some
24 independent way to shut the C-FET off?

25 A The motherboard has independent --

CONFIDENTIAL

Page 51

1 The motherboard has some control of the
2 charging IC that would provide current to the battery
3 pack.

4 Q Where is the charging IC housed itself?

5 A It's on the motherboard.

6 Q So, the motherboard has the capacity to
7 shut down charging under certain circumstances, one
8 of which is if this thermistor connected to the
9 motherboard shows a temperature above 46 degrees?

10 A Correct.

11 Q And what you are not sure of is if the
12 initial charging condition is below 46 degrees but
13 then the thermistor registers information showing
14 that it's above 46 degrees during the charge, you are
15 not sure whether the motherboard continues to have
16 that ability to shut off the FET, to shut off the
17 charge?

18 A I am not sure specifically on this
19 system.

20 Q And when you say on this system, are
21 you talking about the nine volt system? The 9-cell
22 system?

23 Or the system for this particular
24 laptop?

25 A This specific laptop.

CONFIDENTIAL

Page 52

1 I haven't reviewed -- I haven't
2 reviewed that protocol on this system.

3 Q And describe for me if you were to look
4 for the answer to that question, what specific
5 documents are you referring to you will need to look
6 at in order to answer that question if we come back
7 again?

8 A I would -- I would -- I would probably
9 have to review the --

10 I have to go think about that. I am
11 not sure. I am not sure if I have an answer of where
12 I would review that. I'd have to look at the
13 protocol itself.

14 Q Okay. Help me understand.

15 When you refer to a protocol -- I know
16 that must be a term of art that you are referring
17 to -- can you just describe for the record what you
18 are referring to when you are saying to look at the
19 protocol?

20 A I am sorry. I was thinking I would --
21 I would have to look at our system -- I
22 am sorry.

23 Your question is if the SMBus
24 thermistor was detecting lower than 45 degrees, would
25 the thermistor through the -- would the other

CONFIDENTIAL

Page 53

1 thermistor through the imbedded controller
2 independently turn off the charge?

3 Could I look at the --

4 Could I look again at the schematic for
5 -- oh, I'm sorry.

6 I'd be certain that the accuracy of the
7 thermistor of the imbedded controller would probably
8 not be so accurate as the thermistor that goes
9 directly to the fuel gauge.

10 So, it's possible that within a few
11 degrees of margin that the imbedded controller is not
12 going to detect exactly a 45 or 46 degree
13 temperature. There might be a disagreement.

14 So -- I am sorry. I haven't reviewed
15 to see that the imbedded controller, itself, would be
16 monitoring that charge or measuring that temperature.
17 I am not sure about that.

18 Q The system --

19 Actually, the speculation requires that
20 there be two thermistors.

21 One for the -- that educates the fuel
22 gauge the temperature and the other educates the
23 motherboard, right?

24 A Yes.

25 Q And this is an important safety feature

CONFIDENTIAL

Page 54

1 because there could potentially be a failure of one
2 of those thermistors and that way there is a backup
3 that would provide information in the event that one
4 of them failed, right?

5 A It's possible. I am not sure how the
6 thermistor would fail. If it would -- I am not sure
7 -- you know, I can't say --

8 Q Well, what is your understanding of why
9 there is this redundant thermistor system if not to
10 provide a backup in case of one failing?

11 A The original thermistor was just an ID
12 pin. The one that comes on its own separate panel
13 was an ID pin to know that the pack was actually
14 inserted in the system from the smart battery
15 standard.

16 Q I am not understanding that. I
17 apologize.

18 So, if you can explain it better?

19 The smart battery standard requires
20 this, is what you are saying?

21 A The smart battery pack requires that
22 thermistor can double -- they had two functions.

23 One was especially as an ID pin. In an
24 imbedded controller, I think we would look at this
25 pin to also detect that was over a high temp. As far

CONFIDENTIAL

Page 55

1 as the accuracy at 45 degrees or not, I am not sure
2 the imbedded controller would be that -- I am not
3 sure it would be that accurate.

4 So, I don't know the accuracy for the
5 imbedded controller. The 45 degrees was a later
6 requirement from something called a PSE. That we
7 deliver that through the thermistor that's connected
8 to the fuel gauge.

9 Q So, if I understand correctly, the real
10 safety device then with regard to overheating is the
11 thermistor that's connected to the fuel gauge?

12 A That's the principal that -- yes.

13 Q So, if there is a condition of
14 overheating and potential thermal runaway, it is the
15 thermistor connected to the fuel gauge that's going
16 to inform the integrated circuit fuel gauge FET to
17 shut off the battery?

18 A Yes. I am sorry I don't -- I am not
19 perfectly clear on exactly the role of the imbedded
20 controller. I apologize, but I don't know that.

21 Q Again, nobody can know everything, but
22 I might get another opportunity to ask you that
23 question if you get some time to educate yourself on
24 that.

25 I want to now go to a different

CONFIDENTIAL

Page 56

1 document and what I've marked as Exhibit 4.

2 MS. WANEMAKER: Do you mind if we can
3 take about a two-minute break so I can use
4 the restroom before you switch gears --

5 THE WITNESS: I was just going to ask
6 the same thing, to be honest.

7 MR. SCHWARZ: Absolutely.

8 THE WITNESS: Maybe grab another cup of
9 coffee.

10 MS. WANEMAKER: For sure. Thank you.

11 VIDEOGRAPHER: Just a moment, please.

12 The time is 8:18 p.m., and we are going
13 off the record.

14 (Whereupon, a short break was taken)

15 VIDEOGRAPHER: The time is 8:27 p.m.,
16 and we are back on the record.

17 Q Mr. Atkinson, I would like to now have
18 you look at a new document. Another one that I
19 believe that you indicated in your prior testimony
20 that you have reviewed in preparation for today.

21 This we marked as Exhibit 4.

22 It is entitled, "Specifications for
23 Approval Version A11" from LG Chem.

24 It begins with HP01297.

25 Is this the document that you were

CONFIDENTIAL

Page 57

1 referring to that you reviewed in preparation for
2 today?

3 A Yes.

4 Q Generally, is it an accurate statement
5 to say that this is a specification that was
6 submitted to HP by LG for approval to use this
7 particular battery pack design with your Pavilion
8 laptop computers?

9 A Yes. This is their specification in
10 answer to our requirements, yes.

11 Q And with regard to your requirements,
12 this particular specification, as we will see, is for
13 a 6-cell battery pack.

14 And I believe you said that the
15 specification we looked at Exhibit 3 was a
16 specification for a 9-cell. You said there is an --
17 6-cell specification that would have been provided to
18 LG that LG then responded with this proposal for HP
19 to approve for use of these particular battery packs,
20 correct?

21 A Yes.

22 Q Okay.

23 And we will find that at some point.
24 That other specification that we haven't looked at
25 yet.

CONFIDENTIAL

Page 58

1 Now, this particular document, I want
2 to scroll down Exhibit 4 to page 1301. And I am on
3 that now.

4 Can you see that page?

5 Do you want me to make it a little
6 bigger?

7 A Thank you. I can see that.

8 Q Okay. Great.

9 So, under scope, it indicates:

10 "This specification describes the
11 requirements for the battery pack,
12 HSTNN-LB0X supplied by LG Chem. included
13 rechargeable lithium ion battery and
14 Battery Management System. The
15 Battery Management System consists mainly
16 of protection unit and fuel gauging unit."

17 Did I read that correctly?

18 A Yes.

19 Q Now, is the phrase "protection unit" a
20 phrase that's used in the trade with regard to these
21 particular Battery Management Systems?

22 A I am not -- I haven't seen that. I
23 don't think that's used as a formal name. I think
24 it's just a description.

25 Q Okay.

CONFIDENTIAL

Page 59

1 Well, with regard to the description it
2 provides though, we talked about the specification of
3 HP of the overcharge/undercharge protection, the
4 short circuit protection, the overheating protection,
5 and the over voltage protection.

6 Would those be the types of safety
7 devices, then, that would be described as the
8 protection unit for the battery pack?

9 A Yes, I think so.

10 Q And the gauging unit would be
11 referred -- it would be the part of the battery pack
12 or the information about the available charge on the
13 battery that is communicated to the motherboard,
14 right?

15 A Yes.

16 Q Okay. Good.

17 And if we skip down here to under the
18 cell type and configuration under 1.2.2 it says:

19 "The battery pack consists of 6 cells
20 combines with fuel gauging control circuit
21 and protection control circuit."

22 So, that is in the description of what
23 the battery pack generally provides, correct?

24 A Correct.

25 Q And I believe you told us that -- and

CONFIDENTIAL

Page 60

1 it says under cell configuration, that the 6 cells
2 are connected in three units that are connected in
3 series.

4 So, there is two cells, two cells, two
5 cells that are connected in series, right?

6 A Correct. There is three pairs of
7 batteries, yes.

8 Q Much better phraseology than I used.
9 Thank you.

10 I want to turn then to page HP01305 of
11 Exhibit 4.

12 MR. BETKE: By the way, Lee,
13 Mr. Schwarz is highlighting particular
14 things. If you ever need to look at the
15 entire document, he is not preventing you
16 from doing that. He is just putting it up
17 for your ease of reference.

18 Q If at any time, you want to look at the
19 page that precedes it to get context, just ask me.

20 I didn't ask you this, but do you have
21 a copy of this with you today in front of you?

22 A I do.

23 Q Okay. So, you can feel free to also
24 refer to that in case you want to look at any other
25 section of the document since this is a document that

CONFIDENTIAL

Page 61

1 we both have.

2 So, I want to have a look now at this
3 battery pack operation.

4 And the first section is entitled, "3.1
5 First Level Protection."

6 Do you know what that refers to, first
7 level protection?

8 A Yes.

9 Q Can you describe that for us?

10 A First level means a recoverable
11 protection.

12 Q So, recoverable protection means -- if
13 I understand it correctly from the context of this
14 document -- that under certain circumstances the
15 battery pack will shut itself off but can be turned
16 back on once whatever the condition caused it to shut
17 off is cured; is that correct?

18 A That's correct.

19 Q And second level of protection would be
20 a sort of a fail safe type of protection where it
21 shuts the battery pack down and it can't be restored.
22 It would just have to be restored if that were to
23 occur.

24 A That's correct. It's goes to permanent
25 failure.

CONFIDENTIAL

Page 62

1 Q Thank you.

2 So, we are talking about --

3 The first of those two options, the
4 first level protection, which means that the battery
5 pack would be shut down but could be restored and
6 then later once whatever the condition clears that it
7 caused that shutdown, correct?

8 A Okay.

9 Q So, the first sentence of this, the
10 first section involves cell over voltage and cell
11 under voltage.

12 And I think you described what voltage
13 is. It's the potential --

14 So, there is an operating range of
15 voltage that is required for these battery packs that
16 you don't want to exceed that range either below or
17 above, right?

18 A Yes.

19 Q Now, it indicates that --

20 It describes a particular integrated
21 circuit or microprocessor that is made by Texas
22 Instruments as the -- it says BQ20Z70/BQ20Z75.

23 Are those two separate integrated
24 circuits made by Texas Instruments?

25 A I think this refers to the pair of --

CONFIDENTIAL

Page 63

1 There is a pair of devices. I think it
2 refers to -- showing a schematic.

3 Q So, this particular then, this LG
4 version of the battery pack that was eventually --

5 I should ask this question before I go.

6 Was this LG version of the battery pack
7 actually approved by HP for use in the Pavilion
8 Series?

9 A Yes.

10 Q So, the document we have, it doesn't
11 indicate that, but at some later point HP did approve
12 this particular design for a battery pack for the HP
13 Pavilion Series, correct?

14 A Yes.

15 Q Okay.

16 And I believe what you are saying is
17 that this particular battery pack had two different
18 Texas Instrument integrated circuits as part of its
19 Battery Management System?

20 A Correct.

21 Q And do you have an understanding of
22 which one provided which functions or features?

23 A I think they work as a pair.

24 Q So, they actually --

25 They are actually an integrated unit

CONFIDENTIAL

Page 64

1 then?

2 A They work in combination with each
3 other.

4 Q Do you know how --
5 Can you describe that?

6 In other words, how they work in
7 combination with each other, if you know?

8 A Yes. On the schematic page, Bates
9 1316.

10 Q Okay.
11 And that is on this document itself?

12 A Yes.

13 Q So, let's just go back to that.
14 So, that's the schematic page.
15 And what is this a schematic of?
16 Is it the Battery Management System
17 itself?

18 A This is the whole pack. This is a
19 schematic of the entire pack.

20 Q And this features, then, both of those
21 integrated circuits from HP?

22 A The integrated circuits are from Texas
23 Instruments.

24 Q I am sorry. I misspoke. Thank you for
25 correcting me. From Texas Instruments.

CONFIDENTIAL

Page 65

1 And each of these --

2 So, I see something that refers to as

3 U2 and U3.

4 Do those represent those two integrated
5 circuits?

6 A Yes.

7 Q They don't appear to have the same
8 numbers though.

9 Is there any reasoning for that?

10 A I don't remember the naming, no. I
11 don't understand the difference in naming.

12 Q Okay.

13 And as we look at this schematic, then,
14 there appear to be on the left-hand integrated
15 circuit, there appears to be 16 connections; is that
16 correct?

17 A I didn't count. But there are a number
18 of connections, yes.

19 Q Are you familiar with what each of the
20 connections on each of these integrated circuits is
21 supposed to do with regard to function?

22 A Not all of them. I would have to look
23 at the data sheets to know all of these. But from a
24 high level, yes.

25 Q Okay.

CONFIDENTIAL

Page 66

1 Let's go back, then, to the page that I
2 was looking at then.

3 I appreciate your directing me to that
4 schematic.

5 Going back to page HP01305.

6 There we go.

7 This Section 3.1.1 is describing how
8 the battery pack that was designed and provided by LG
9 performs this cell over voltage and cell under
10 voltage function, correct?

11 A Yes. This describes the perimeters of
12 the events occur.

13 Q So, with regard to this particular
14 possible condition, it provides the details of the
15 various voltage differences that would initially have
16 it shut the FET or the connection that allows the
17 charging to occur off if the perimeter were exceeded,
18 correct?

19 A Correct.

20 Q And then, it also provides the -- if
21 the cell recovers to get back within or the battery
22 pack recovers to get back within the operating
23 voltage perimeters, then it's an indication that the
24 FET would be turned back on and charging can resume?

25 A Correct.

CONFIDENTIAL

Page 67

1 Q And similarly, 3.1.2 describes the
2 perimeters for the charge and discharge over current,
3 which again we described as being different than
4 voltage, correct?

5 A Yes.

6 Q And so, if the current is exceeded --
7 If the operating range current is
8 exceeded, the same thing happens. The charger gets
9 turned off. And then if -- or if it is too low, the
10 charger gets turned off and then if it recovers to
11 the operating range it's allowed to go back on?

12 A That's correct. I think you used the
13 word "charger," but these control FETs are turned
14 off, yes.

15 Q Okay.

16 But the control FET is what allows the
17 AC power that's converted to DC power that actually
18 gets to the batteries, right?

19 A I am sorry.

20 Would you please ask that question
21 again?

22 Q Yeah. I probably misstated it.

23 Let me rephrase it.

24 When we talk about charging these
25 battery packs, we are talking about plugging a

CONFIDENTIAL

Page 68

1 charging system into an AC source, AC power source,
2 and then connecting it to the device, the laptop,
3 that eventually connects to the battery pack, right?

4 A Yes.

5 Q When we talk about the FET shutting
6 off, it would shut off -- when it shuts off, it shuts
7 off the connection between the power coming through
8 that power cord charger to the device?

9 A It shuts off the power inside the
10 battery to the cell. It disconnects inside the
11 battery pack itself. That current into the cell.

12 Q So, once that FET is off, there is no
13 more power running into the battery pack?

14 A That's correct.

15 Q Is there still power to the motherboard
16 that's provided by the charger even though the power
17 is not going through the battery pack?

18 A Yes. But we call that the AC brick,
19 yes.

20 Q Describe for me what that means?

21 A AC brick is the ACDC conversion. There
22 is another chip on the motherboard called the charger
23 chip, the IC charger chip. And then, the output of
24 that charger chip goes into the battery terminals.

25 Q What is the function of the IC charger

CONFIDENTIAL

Page 69

1 chip in the motherboard?

2 A It converts the 19 volts outputs from
3 the AC brick into a voltage that is requested by the
4 battery pack.

5 Q And I may be using the wrong
6 terminology, but if the battery pack is disabled, in
7 other words, if the -- is taken out or if the FET is
8 turned off, is there still power available to the
9 motherboard of the computer to operate without the
10 battery pack?

11 A Yes.

12 Q So, if the battery pack fails for some
13 reason and the FET shuts off, does the power to the
14 motherboard and the function of the computer, is that
15 affected at all?

16 A That continues.

17 Q It continues?

18 A Yes.

19 Q So, for the Pavilion Series laptops
20 then, if you were to remove the battery pack and just
21 plug in the AC power source, would there be any
22 change in the function of the computer?

23 A No. It will work fully without a
24 battery pack installed.

25 Q Okay.

CONFIDENTIAL

Page 70

1 Thank you.

2 I want to turn to page 1306 of Exhibit
3 4. This is, again, the LG specification that was
4 approved by HP for these battery packs for the
5 Pavilion computer series.

6 And there is a description on 3.1.3
7 short circuit protection, which is another safety
8 device that will shut off the FET in the event of
9 this condition appearing in the battery pack,
10 correct?

11 A Correct.

12 Q And all of these, the ones that we are
13 talking about so far, are designed to as a protection
14 system to protect the battery pack and for safety,
15 correct?

16 A Well, I think for short circuit
17 protection it is a protection for external. I don't
18 believe that that's a protection for the battery pack
19 per se. That's a protection for whatever might be
20 shorting that output.

21 Q So, it can be protection for some other
22 components in the computer that could be damaged by
23 the short circuit?

24 A That may be the short circuit.

25 Q And then 3.1.4, that begins on page

CONFIDENTIAL

Page 71

1 1306, is for the over temperature protection; is that
2 correct?

3 A Yes.

4 Q And this specifically calls out a one
5 Texas Instruments integrated circuit BQ20Z70 as part
6 of this Battery Management System that is responsible
7 for the over temperature protection, correct?

8 A Correct.

9 Q And then, it says that:

10 "This particular integrated circuit
11 sets the over temperature charging safety
12 status flag."

13 Did I read that correctly?

14 A Yes.

15 Q What is a safety status flag?

16 What does that mean?

17 A That would be a digital value that the
18 motherboard can read.

19 Q And can you describe that any further
20 when you say a digital value?

21 Are you talking about a digital value
22 with regard to the temperature or a digital value
23 with regard to some signal that is sent by the
24 integrated circuit to the motherboard, or both?

25 A Let me read it. At least this is an

CONFIDENTIAL

Page 72

1 internal register that the integrated -- the fuel
2 gauge IC, itself, would set when it was over
3 temperature.

4 Q So, with regard to the safety status
5 flag, what I am trying to get at, what information is
6 conveyed to the motherboard if the safety status flag
7 is activated?

8 A I am not sure. It might be that the
9 charge current, itself, could also be shut down.

10 Q But that shutdown, we are talking about
11 occurs, with regard -- within the Battery Management
12 System itself, right?

13 A Here it describes it --

14 It describes a signal that turns off
15 the charge -- I'm sorry. It turns off the charge
16 FET.

17 Q Right.

18 So, does the motherboard then have the
19 opportunity by receiving the safety status flag to
20 take some other action beyond what's being -- what's
21 happening in the Battery Management System?

22 A I am not sure. I don't know.

23 Q Now, it says here in Exhibit 4 that if
24 the pack temperature reaches or surpasses the over
25 temp charge limit during charging for a two second

CONFIDENTIAL

Page 73

1 time period, is when the safety status flag occurs?

2 A Yes.

3 Q Then it says if the OT FET, which is
4 the controller that we are talking about, sort of the
5 on/off switch for the charger, is set and the over
6 temperature protection portion of this integrated
7 circuit registers that over temperature condition,
8 the charging is disabled and the charge FET is turned
9 off?

10 A That's correct.

11 Q And then, it talks about what it does
12 with regard to setting the voltage if that happens,
13 right?

14 A Correct.

15 Q If you go to the next page, there is a
16 chart.

17 And this actually provides the over
18 temperature values that are programmed in so that if
19 that condition occurs --

20 Withdraw that question.

21 This chart provides the actual
22 temperatures at which this over temperature condition
23 is realized?

24 A Yes.

25 Q And similar to what we saw in the

CONFIDENTIAL

Page 74

1 specification for the 9-cell battery pack that HP had
2 sent, this indicates if the temperature exceeds 46
3 degrees centigrade for two seconds, then this over
4 temperature condition is realized and the FET is
5 turned off and the charging stops?

6 A Correct.

7 Q And is it your understanding that this
8 46 degree temperature is registered on the thermistor
9 that's connected to this particular integrated
10 circuit?

11 A Yes.

12 Q And does this provide you with any
13 information about the other thermistor that we talked
14 about?

15 The redundant thermistor that's
16 connected directly to the motherboard?

17 A No, it doesn't.

18 Q So, this doesn't help us in
19 understanding whether that thermistor has any impact
20 on the motherboard's ability to shut off the charger?

21 A That's correct.

22 Q Now, we talked about first level of
23 protection.

24 And again, just to review, the first
25 level of protection is when something happens that

CONFIDENTIAL

Page 75

1 the battery pack can be shut off but it can resume
2 functioning later if that condition is relieved,
3 right?

4 A Yes.

5 Q But there is a second level of
6 protection that's provided that will completely
7 disable the battery pack and not allow it to function
8 again and require a replacement, right?

9 A Correct.

10 Q And under the second level of
11 protection, there is a reference -- there is a
12 reference actually to the cell imbalance fault.

13 Do you see that?

14 A Yes.

15 Q We talked about the importance of cell
16 balance previously that under the way these Battery
17 Management Systems are designed, you want the cells
18 to charge at roughly the same rate and not have one
19 be much more charged than another one, correct?

20 A Correct.

21 Q And one of the features of these
22 integrated circuits that are part of this process, in
23 particular the BQ20Z70 circuit, is to monitor the
24 balancing of the charging of the cells itself?

25 A Yes.

CONFIDENTIAL

Page 76

1 Q And if according to this second level
2 of protection there if a certain level of imbalance is
3 detected -- and that I think is technically written
4 here somewhere -- then the battery pack has the
5 ability to actually blow a fuse that will disable the
6 battery pack and stop any additional current from
7 coming in from the AC source, correct?

8 A Correct.

9 Q Now, in this HP Pavilion Series laptop
10 system, did the motherboard have any similar ability
11 to monitor the cell charging balance and shut off the
12 power in the event that a cell imbalance fault is
13 detected?

14 A No, it did not implement that.

15 Q So, the motherboard had --

16 The motherboard -- or excuse me -- the
17 device relied entirely on the Battery Management
18 System to monitor cell balance in charging?

19 A That's correct.

20 Q Now, there is something that's referred
21 to here as a second level of protection IC input.

22 Do you see that?

23 A Yes.

24 Q It says:

25 "The PFIN input of the BQ20Z70 can be

CONFIDENTIAL

Page 77

1 used to determine the state of an external
2 protection device such as the BQ294XX."

3 Did I read that correctly?

4 A I see that.

5 Q Do you understand what that refers to?

6 A I can look at the schematic and see if
7 it's connected, but I think I understand what it
8 means.

9 Q So, what is an external protection
10 device?

11 What does that refer to?

12 A It's a redundant device that's
13 measured -- that is independently measuring each of
14 the cell voltages.

15 Q Where is that particular device
16 located?

17 Is that in the Battery Management
18 System or is that a device that's in the computer
19 itself?

20 A It's in the battery pack.

21 Q So, according to this, is it your
22 understanding that the --

23 MR. SCHWARZ: I don't know where that
24 feedback is coming from.

25 Is everybody on mute other than the

CONFIDENTIAL

Page 78

1 witness? I ask that you be because we are
2 getting a lot of feedback.

3 Q With regard to --

4 MR. BETKE: I was on mute.

5 MR. SCHWARZ: Yeah, I saw that Chris.
6 Thank you. I was asking about everybody
7 else.

8 This is better, I am not getting
9 feedback. Thank you.

10 Q The second level of protection, is that
11 something that you believe was part of the Battery
12 Management Systems for the approved battery packs for
13 the HP Pavilions?

14 A I can look at the schematic and see if
15 I can find it here.

16 Q The schematic for the LG version?

17 A Yes.

18 It looks like that pin is connected on
19 the LG schematic.

20 Q When they refer to an external device
21 in this particular section, do you know what that
22 refers to?

23 A Yes.

24 Q Can you explain that?

25 A If you look at the schematic, it's

CONFIDENTIAL

Page 79

1 Device E1.

2 Q Why is it referred to as an external
3 device?

4 What does that refer to?

5 A I mean, it's not within the Texas
6 Instruments chip set. It's a third integrated
7 circuit on the battery pack.

8 Q What is the purpose of that third
9 integrated circuit, to your understanding?

10 A That's a redundant protection device
11 used for second level protection.

12 Q So, when LG Chem designed this battery
13 pack, it provided redundant protection for all of
14 these safety features, overcharge, overheating, over
15 current; is that correct?

16 A Redundant protection -- the second
17 device is redundant protection for voltage.

18 Q For voltage only?

19 A Yes.

20 Q And that would apply to the cell
21 imbalance voltage?

22 A That's for any voltage. It's not
23 necessarily imbalance, but that was basically a
24 maximum voltage for any cell pair. There are other
25 redundant pieces especially in the cells and also for

CONFIDENTIAL

Page 80

1 the fuse itself for over current. So, there are a
2 redundant features for current protection. But this
3 E1 device is to -- it's a redundant device for cell
4 over voltage.

5 Q And can cell over voltage lead to
6 overheating of a cell?

7 A It can do damage to the cell, yes.

8 Q And potentially thermal runaway if not
9 shut down?

10 A Yes.

11 MR. BETKE: I am sorry. What was his
12 answer?

13 MR. SCHWARZ: Yes.

14 MR. BETKE: I thought he said I guess.
15 That's what it sounded to me.

16 Q In the event that this second
17 protection system operates or detects one of these
18 conditions, and the outcome of that is the blowing of
19 a fuse that disables the battery pack permanently?

20 A Correct.

21 Q I want to stop sharing for a moment.
22 I would like to move on to Exhibit 1,
23 topic number 3. I will put that on so you can see
24 it.

25 Topic number three reads:

CONFIDENTIAL

Page 81

1 "Any designed remote or external
2 balancing system designed into the laptop
3 such that the motherboard can monitor cell
4 balancing and/or overcharging of any
5 battery cell."

6 Do you see that?

7 A Yes.

8 Q Is that a topic that you are prepared
9 to testify about today?

10 A Yes.

11 Q Can you tell us what you did to educate
12 yourself about that particular topic in order to
13 answer questions on behalf of HP today?

14 A I looked at the MU06055 battery spec.
15 The HP battery specification.

16 Q Did you look at anything with regard to
17 the functionality of the motherboard or other parts
18 of the actual device itself outside of the Battery
19 Management System?

20 A I did not.

21 Q So, with regard to this topic, then,
22 what we are trying to find out is, is there some
23 ability of the motherboard to control the input of
24 energy into the battery pack under certain
25 circumstances?

CONFIDENTIAL

Page 82

1 A Under certain circumstances, you mean,
2 specifically with regards to cell balancing or?

3 Q I am talking about with regard to cell
4 balancing and/or overcharging of any particular
5 battery cells.

6 In other words, does the motherboard
7 have some ability, independent of the Battery
8 Management System, to monitor cell balancing and to
9 shut down the power to the battery pack in the event
10 of overcharging of a particular battery cell?

11 A The motherboard did not look for cell
12 balancing dynamically. So, it did not -- the
13 motherboard and the code running on the motherboard
14 did not actively -- did not dynamically look at cell
15 balance and -- did not look at cell balance.

16 Q So, the only cell balance function for
17 the HP Pavilion laptop was contained in the Battery
18 Management System of the battery pack?

19 A Correct. The only supervision was in
20 the battery pack.

21 Q Now, we talked about cell balancing and
22 cell imbalancing and overcharging can lead to some
23 other things including overheating of a cell battery
24 pack and overheating of the battery pack.

25 So, did the motherboard have the

CONFIDENTIAL

Page 83

1 capacity to sort of monitor some of the sequela of
2 cell overcharging or imbalancing?

3 In other words, some of the --

4 Could it monitor whether the -- there
5 is overcharging occurring that was causing too much
6 heat, for instance?

7 MR. BETKE: I am going to object to the
8 form of the question, but you can go ahead
9 and answer it.

10 MR. SCHWARZ: I will rephrase it
11 because it went on forever, and thank you.

12 MR. BETKE: I wasn't going to say that,
13 but.

14 Q So, when cells become imbalanced, they
15 can create a situation for too much heat being
16 created by the battery, correct?

17 A I am not sure if it's about heat, but
18 the cell imbalance -- I am sorry.

19 The cell imbalance itself is not the
20 problem. It's an over voltage of any cell that could
21 create a damage of the cell.

22 Q Right.

23 So, in other words, if there are
24 multiple cells in these battery packs and if some
25 cells are fully charged and some cells are not

CONFIDENTIAL

Page 84

1 charged to the same extent, and current continues to
2 flow into the battery pack, there is a potential for
3 those fully charged cells to become overcharged?

4 A In an HP battery pack, we have those
5 two redundant systems that would prevent that.

6 Without those safeguards, yes, the
7 voltage from the -- the battery pack as per the
8 charged voltage. And as long as that charged voltage
9 is within some boundary, the motherboard will set the
10 charging IC to give the voltage requested by that
11 battery.

12 Q So, the motherboard integrated circuit
13 controls the flow of current into the battery pack?

14 A Yes. Only controls the voltage that
15 goes to the battery pack.

16 Q And you are saying that the balancing
17 function is performed entirely within the battery
18 pack and the motherboard doesn't get any kind of
19 realtime data as to what the balancing situation is?

20 A That's correct.

21 Q But if those battery imbalance systems
22 on the battery pack were to fail or not exist, would
23 the motherboard have the capacity to shut down the
24 power to the battery pack if there was a failure such
25 as an overheating situation caused by that over

CONFIDENTIAL

Page 85

1 voltage?

2 A I think you are leading to something
3 else.

4 The motherboard relies on the battery
5 pack to avoid over voltage. The motherboard will
6 only contain the maximum -- the total maximum voltage
7 that -- the battery pack. But the motherboard does
8 not distinguish that there is an imbalance on the
9 battery pack. It relies on the battery pack to
10 differentiate that.

11 Q So, if I understand what you are saying
12 correctly, the only thing the motherboard does is
13 monitors the maximum voltage going to the battery
14 pack. It doesn't monitor the voltage in any
15 particular cell in the battery pack or has any role
16 in managing the cell balancing of the voltage of
17 those cells?

18 A That's correct.

19 Q And I think I asked you this question
20 previously, but I am going to ask it again under this
21 topic.

22 In the event that the overcharging
23 system within the Battery Management System fails and
24 there is an overheating situation, is there any
25 functionality of the motherboard to detect that and

CONFIDENTIAL

Page 86

1 take any action to stop the charging of the battery
2 pack?

3 A I am sorry that I didn't answer this
4 before. But I am not sure what the circuitry on the
5 motherboard would be dynamically for that.

6 Q And if the motherboard --
7 Withdraw that question.

8 We saw that there was a particular pin
9 that was provided to transmit information from a
10 separate thermistor into the motherboard, correct?

11 A Yes.

12 Q So, that means that the temperature
13 information has the capacity to be transmitted
14 independently of the Battery Management System to the
15 motherboard?

16 A Yes.

17 Q And if HP wanted to do so, it could
18 design functionality to have the motherboard take
19 action if a certain temperature value was transmitted
20 through that pin?

21 A Yes.

22 Q And in your experience in various
23 laptop designs, is it your understanding that in at
24 least some series of HP computers, that functionality
25 is provided to the motherboard to detect overheating

CONFIDENTIAL

Page 87

1 of the battery pack and shut down the power
2 independently of the Battery Management System?

3 A That I just can't -- I can't say with
4 accuracy. I can't say that with reliability. I don't
5 know. I am not sure. I assume the answer is yes,
6 but I can't say that a hundred percent accurately.

7 Q With regard to topic number three, did
8 you look at any additional documents other than the
9 ones you've already provided to educate yourself as
10 to how to answer questions regarding topic number
11 three?

12 A No, I haven't. Not for this position,
13 no.

14 Q In preparing for this deposition, did
15 you speak to any other HP employees or former
16 employees on topic number three to educate yourself
17 to provide answers?

18 A No.

19 Q I want to move now to topic number
20 four.

21 And topic number four reads:

22 "HP's knowledge of counterfeit --"

23 MR. SCHWARZ: Actually, it's been
24 another 45 minutes.

25 Do you want to take a break now or you

CONFIDENTIAL

Page 88

1 want to keep going?

2 MR. BETKE: We can take a quick break.

3 It probably wouldn't hurt.

4 MR. SCHWARZ: How about a five-minute
5 break?

6 MS. BETKE: Sure.

7 Lee, does that sound good with you?

8 THE WITNESS: Yeah, great.

9 MR. BETKE: Okay. Sounds about right.

10 MS. WANEMAKER: Yes.

11 MS. SCHWARZ: Okay.

12 VIDEOGRAPHER: The time is 9:15 p.m.,
13 and we are going off the record.

14 (Whereupon, a short break was taken)

15 VIDEOGRAPHER: The time now is 9:21
16 p.m., and we are back on the record.

17 Q Mr. Atkinson, I would like to move on
18 to now into topic number four, which is -- I will
19 read them into the record:

20 "HP's knowledge of counterfeit
21 batteries on the market that were being
22 sold for use in Pavilion Series Laptop
23 computers prior to the date of incident,
24 including contact with third-party battery
25 suppliers regarding safety and design of

CONFIDENTIAL

Page 89

1 counterfeit replacement batteries."

2 So, let me take those in two different
3 segments.

4 And before actually doing that, let me
5 ask you this.

6 What did you do to prepare to respond to questions
7 on topic number four for today?

8 A I've reviewed our history of --
9 especially the battery counterfeit message that were
10 introduced in something like 2019 to understand what
11 the thinking was on that.

12 Q So, when you say the battery
13 counterfeit message, are you talking about something
14 that was programmed into HP computers to alert users
15 that the battery pack or the battery management --
16 the battery pack -- I am sorry -- that was connected
17 to the computer was a counterfeit?

18 A It's a message that notifies the
19 customer when the battery doesn't respond in a
20 special HP way.

21 Q I am going to get into what the systems
22 are. I just want to ask you.

23 When you say the message, you are
24 talking about a message that would flash on the
25 screen of the device itself, right?

CONFIDENTIAL

Page 90

1 A A message that the user is given, yes,
2 on display when they turn it on.

3 Q And did you review any internal HP
4 documents that discussed the need for that message?

5 A A few years ago. A few years ago with
6 an engineer I spoke to this, yes.

7 Q A few years ago you spoke to a person
8 who told you that?

9 MR. BETKE: Hold on for one second.

10 I think what might be hanging up Lee is
11 I think he just knows about this from his
12 work. So, you are, like, asking what he
13 did to prepare for it, but, like, so, it's
14 confusing to him because he just knows
15 about it because he was part -- you know,
16 it was involved in his work.

17 MR. SCHWARZ: Okay. Thank you.

18 MR. BETKE: If that helps.

19 MR. SCHWARZ: That's helpful.

20 THE WITNESS: Thank you.

21 Q Mr. Atkinson, when did you first become
22 involved in your role at HP in concerns over
23 counterfeit battery packs being used in HP computers?

24 A I think it's been within the last five
25 or six years.

CONFIDENTIAL

Page 91

1 Q How did that occur?

2 How did you become involved in that
3 particular topic?

4 A Working on other cases that had --
5 Working with other cases that involved
6 aftermarket batteries or third-party batteries.

7 Q So, your involvement with that topic
8 was because of legal cases that were brought?

9 A Yes.

10 Q Is there a section or division or unit
11 within HP that has actually become involved in
12 investigating counterfeit battery packs that were out
13 on the market that were being sold for use at HP
14 computers, that you are aware of?

15 A Well, at least I am aware of a group
16 who looks for counterfeits. And specifically HP
17 branded batteries, yes, there is a group that does
18 that.

19 Q Can you describe what the name or
20 description of that group is?

21 A I can't remember their name. I can't
22 remember their name of the group, but they basically
23 look at the use of the HP brand.

24 Q Is it part of the legal department, to
25 your knowledge?

CONFIDENTIAL

Page 92

1 A I don't know.

2 Q How did you become aware of this group
3 and what information did you get from the group?

4 A I was curious what HP would -- what HP
5 could do on after market, on counterfeit, cloned
6 batteries.

7 Q And when you say what HP could do, you
8 are talking about sort of taking legal action against
9 manufacturers that were trying to sell products that
10 appear to be HP products but were not?

11 A Especially interested in what we might
12 be able to do to -- what we could do to avoid the
13 problems with third-party with substandard batteries.

14 Q And in your --

15 In the other cases that you were
16 involved in, were counterfeit batteries -- in legal
17 cases I am talking about that you indicated you have
18 been deposed a number of times I think you said four
19 in battery cases.

20 Did all four of those involve
21 counterfeit batteries?

22 A No.

23 Q Did some number of those four involve
24 counterfeit batteries?

25 A Oh, I am sorry. Third-party batteries.

CONFIDENTIAL

Page 93

1 At least some that I seen involved third-party
2 batteries.

3 Q Let's talk about third-party batteries.

4 Would it be fair to say that HP did not
5 manufacture any of the battery packs including the
6 ones that came with the original HP Pavilion?

7 That they are all made by
8 third-parties?

9 A I am sorry. By third-party batteries,
10 I mean unauthorized manufactured. Batteries that are
11 not authorized by HP.

12 Q Okay.

13 A But to answer, that HP does not
14 manufacture.

15 Q Right.

16 So, we looked at Exhibits 3 and 4 and
17 you said there is an alogous 6-cell version of
18 Exhibit 3 where HP has a specification, but in order
19 for a particular battery pack to be authorized to be
20 used on an HP device, HP has to approve a
21 specification similar to one that LG submitted that
22 we looked at as Exhibit 4, correct?

23 A It needs the approval process, yes.

24 Q And LG was only one of several
25 manufacturers that got the approval to use their

CONFIDENTIAL

Page 94

1 particular battery pack in HP Pavilion computers,
2 correct?

3 A Well, they built through HP's
4 specification. So, we regard that as an HP battery
5 of course.

6 But, yes, the batteries that were made
7 were all through our specification and through our
8 business purchasing, yes.

9 Q I am sorry. Let me -- I think --
10 I know what you meant, but I don't
11 think you said it that way.

12 Batteries that were included in the HP
13 Pavilion Series laptops as sold were all approved,
14 authorized battery packs under this process that we
15 talked about?

16 A Yes, the HP processed battery. Yes.
17 They were HP approved batteries.

18 Q Right.

19 But you became aware at some point in
20 your career that there were other unauthorized
21 third-party manufactured batteries that were being
22 sold as if they were authorized approved HP
23 batteries, right?

24 A No. Not sold as autho -- I am sorry.
25 We were aware that at some time there

CONFIDENTIAL

Page 95

1 were ones with HP brand. But within the last five or
2 six years, aware that there are batteries that have
3 no HP approval whatsoever that are sold as
4 replacement of authorized HP batteries.

5 Q You became aware of that?

6 A Yes.

7 MR. BETKE: I think there might be a
8 nomenclature thing here between counterfeit
9 versus third -- unapproved third-party.
10 Maybe you want to ask about that. I think
11 you guys might be talking past each other
12 in that regard.

13 Q So, is there a distinction in your view
14 between unapproved unauthorized battery packs made by
15 third-parties versus counterfeit battery packs made
16 by third-parties?

17 A Yes.

18 Q And help me with that distinction, what
19 you are talking about.

20 A Counterfeit would have the HP brand.

21 Q Okay.

22 A It would be marked as HPs.

23 Q So, let's talk about that.

24 So, in the last five or six years, you
25 became aware that there were some unauthorized

CONFIDENTIAL

Page 96

1 battery packs being sold to be used as replacement
2 batteries for HP Pavilion laptops and some of them
3 actually had HP's brand on them and some of them
4 didn't?

5 A The counterfeits -- I vaguely was aware
6 of counterfeits for a long time. Longer than that
7 period of time. But especially in the last five or
8 six years, it's a very clear significant availability
9 of third-party battery packs that are not branded
10 with HP.

11 Q So, again the distinction that counsel
12 for HP was helping me understand is that there are
13 sort of two classes of unauthorized battery packs out
14 there that could potentially be used in a Pavilion
15 computer.

16 One of them actually has an HP brand on
17 it and the other one doesn't, but both of them have
18 not been cleared by HP to work effectively in this
19 computer system, right?

20 A That's correct.

21 Q And you said that you have been aware
22 of those unauthorized battery pack issues for many --
23 more than five or six years?

24 A Yes. The non HP brand. The prevalence
25 of those battery packs has become significant in the

CONFIDENTIAL

Page 97

1 last five or six years.

2 Q And in addition to the --

3 Withdraw that question.

4 Are you aware of HP actually acquiring
5 any unauthorized battery packs and studying them to
6 find out their functionality?

7 A I've done that. I am not aware if
8 anybody else has done that.

9 Q When did you begin doing that?

10 A Probably about three years ago.

11 Q And how many different unauthorized HP
12 Pavilion battery packs would you say that you
13 studied?

14 A Two. Two or three.

15 Q And you said that that happened in the
16 last two or three years?

17 A Two to four years, let's say.

18 Q Did you write reports based upon what
19 you found in studying those unauthorized battery
20 packs?

21 A Protected by privilege. Only one that
22 I reviewed that might have privilege on it.

23 MR. BETKE: So, hang on, Lee. So,
24 answer the question yes or no. And then,
25 if you believe it was related to litigation

CONFIDENTIAL

Page 98

1 that it was communicated to an attorney,
2 then so state, and we will invoke a
3 privilege.

4 But at least answer the question
5 whether or not you prepared some reports.

6 THE WITNESS: Yes.

7 Q Just so that I am clear, your efforts
8 to do this, this process of investigating
9 unauthorized battery packs for use in the HP
10 Pavilion, was that done for purposes of litigation
11 only?

12 A Yes.

13 Q So, other than your efforts to study
14 unauthorized battery packs and whatever functionality
15 they had, that you did in litigation, you are not
16 aware of any similar process going on within HP where
17 unauthorized battery packs were being studied for
18 purposes of, say, safety and warning consumers not to
19 use these products?

20 A Well, I am not aware of any other study
21 with an HP for these other -- for these other battery
22 packs.

23 Q Right.

24 Have you --

25 Did you inquire as to whether --

CONFIDENTIAL

Page 99

1 Did you take any action in preparation
2 for today to find out whether there was some other
3 unit within HP that was doing that function outside
4 of purely for litigation?

5 MR. BETKE: Or would you know as part
6 of your work?

7 A I am not aware of any other study
8 for -- any other study on unauthorized battery packs.

9 Q But my question is did you inquire of
10 anyone else in the company to find out if there is
11 something you are unaware of that is actually
12 occurring with these unauthorized battery packs are
13 being studied for purposes other than litigation?

14 Did you inquire of anyone about that
15 topic?

16 A No. I've had discussions with other
17 people on this, but I am not aware of any other
18 activity that actually -- to actually analyze these
19 battery packs.

20 Q When you say you've had discussions,
21 again, I don't want to know any discussions you had
22 with lawyers, but, in other words, have you had any
23 discussions within the company, generally outside of
24 litigation process, about the potential hazards
25 associated with using these unauthorized battery

CONFIDENTIAL

Page 100

1 packs because they lack certain safety features?

2 A Yes.

3 Q And when did you have those
4 conversations and with whom again outside of
5 litigation context?

6 A The question about how we can -- about
7 what me might be able to do to discourage use of
8 third-party batteries.

9 Q Yes.

10 So, that's what I understood the
11 concept was, but my question is, who did you discuss
12 that with and when?

13 A I talked to a few people over the last
14 four years on this. Last four years on this.

15 Q So, we have when.

16 Who were the few people that you
17 talked to?

18 A Another person who -- I have to name a
19 name, David Pipho.

20 Q Do you know how to spell that, please?

21 A P-I-P-H-O.

22 Q Where in the HP system is Mr. Pipho
23 housed?

24 A He works in quality. HP quality group.

25 Q Where is that located?

CONFIDENTIAL

Page 101

1 A In Houston.

2 Q Can you recall the name of anyone else
3 that you had this conversation with?

4 A Yes. With -- no. I am trying to
5 remember specifically. I can't remember a name
6 that -- I am trying to remember a specific
7 conversation that I had with someone. But at least I
8 am trying to remember specific discussion.

9 Q You are having trouble remembering who
10 you talked to?

11 A Yeah. I am trying to put in context --
12 I am trying to remember a specific conversation and
13 how -- and what exactly we talked about.

14 Q So, the only name that you can give me
15 is Mr. Pipho?

16 A Yes. Right now, yes.

17 Q With regard to your discussions with
18 Mr. Pipho, do you know if any action was taken by HP
19 to further those discussions after you had the
20 discussion with Mr. Pipho?

21 A I don't know if there -- I don't know
22 if there is anymore further action. No, I don't
23 know.

24 Q Do you remember why it was that you
25 chose Mr. Pipho to discuss this particular topic

CONFIDENTIAL

Page 102

1 with?

2 A I am aware of other incidents we had
3 with after market batteries or third -- or
4 unauthorized batteries.

5 Q I am sorry. I didn't catch your
6 answer.

7 You are saying that you knew he was
8 aware of that problem as well?

9 A Yes.

10 Q And how did you understand that he was
11 aware of this problem in addition to you being aware
12 of it?

13 A I don't remember how.

14 Q Did you communicate with Mr. Pipho any
15 of the knowledge that you had gained from your
16 analysis of the unauthorized battery packs in
17 litigation?

18 A Litigation, yes. Roughly.

19 Q So, in other words, you gained certain
20 knowledge from your work on a particular legal case
21 about the functionality or lack of functionality of
22 some of these unauthorized battery packs and that
23 information you then used to have this discussion
24 with Mr. Pipho?

25 A Yes.

CONFIDENTIAL

Page 103

1 Q And your goal in doing that was to see
2 if there was something that HP could do to prevent
3 those types of unauthorized battery packs that lacked
4 that functionality from operating in the HP systems?

5 A Yes.

6 Q Did you have this discussion with
7 Mr. Pipho one time or multiple times?

8 A Probably multiple times.

9 Q And did Mr. Pipho ever communicate back
10 to you what, if anything, he or others at HP were
11 doing to address the concerns that you had raised?

12 A We discussed ideas about what might be
13 possible, yes.

14 Q Did you communicate with Mr. Pipho
15 information about the lack of safety functionality
16 you were finding inside of these unauthorized
17 third-party battery packs?

18 A I did.

19 Q What did you convey to him on that
20 topic?

21 A That these battery packs are void of
22 even authentic reporting. That the battery packs
23 are -- some of these battery packs will sacrifice
24 multiple standard safety features.

25 Q And some of those standard safety

CONFIDENTIAL

Page 104

1 features would be the thermal protection shutdown
2 process that we talked about?

3 A Yes. The -- sacrifice almost
4 everything that HP would require for a battery pack.

5 Q And that would include the cell
6 balancing function as well?

7 A Yes.

8 Q And even though these battery packs --
9 these counterfeit unauthorized battery packs lacked
10 all of those safety functions, they were still able
11 to function within the HP Pavilion Series laptops?

12 A Yes.

13 Q And you have been aware of this and HP
14 has been aware of this you said over four years?

15 A I am thinking about five or six years.
16 The prevalence of the uses has become significant.

17 Q To your knowledge, has Mr. --
18 Is it Pipho, did you say?

19 A Yes.

20 Q Has Mr. Pipho communicated back to you
21 any effort within HP to provide information to
22 purchasers of HP laptops of this danger that you are
23 describing of these completely functional battery
24 packs lacking all of the safety devices HP requires
25 that would work in an HP Pavilion laptop?

CONFIDENTIAL

Page 105

1 MR. BETKE: Did you say beyond the
2 pop-up that he referred to earlier?

3 MR. SCHWARZ: Well, I am asking about
4 previously manufactured --

5 Withdraw that question.

6 Q When did the pop-up that you
7 described -- meaning, a message that the computer
8 operator would see on the screen about the potential
9 that the battery pack that was in the computer was an
10 unauthorized HP device -- when did that pop-up first
11 appear or first become available on a newly
12 manufactured HP laptop computer?

13 A In 2019.

14 Q So, prior to that, was there any
15 message that an operator prior to units manufactured
16 prior to 2019, was there any message that a user of
17 an HP laptop, a Pavilion laptop computer, would
18 receive in the event that an unauthorized battery
19 pack lacking safety functions was installed in that
20 computer?

21 MR. BETKE: You are now talking about a
22 pop-up, not in the materials that they get
23 with the machine? You are talking about,
24 like, on the computer a pop-up?

25 MR. SCHWARZ: Yes, and we will get into

CONFIDENTIAL

Page 106

1 the materials. I am talking about the
2 pop-up that you brought up a few minutes
3 ago and Mr. Atkinson described.

4 A Before that there was no message when a
5 non HP battery was -- when a battery that didn't
6 identify as HP was installed.

7 Q What was the --

8 We will get to that. I will leave that
9 for now.

10 I withdraw that question.

11 To your knowledge, was any information
12 about the concerns that you raised with Mr. Pipho
13 ever communicated to registered owners of HP laptop
14 computers that lacked this pop-up?

15 MS. MASTRIANO: Form.

16 A You mean for previous customers? I
17 think that goes to the material that we had before.
18 But no, there has been -- I don't know of any other
19 communication from HP on these aftermarket batteries.

20 Q So, I think you said that you became
21 acutely aware of this problem in the last five or six
22 years, correct?

23 A Yes.

24 Q And when you became acutely aware of
25 this problem of these completely functional battery

CONFIDENTIAL

Page 107

1 packs lacking safety devices were out there being
2 used as replacement batteries for HP, did you find
3 that there were others within the company that were
4 aware of this problem even before you were?

5 A No. I think that -- my sense is that
6 around 2017 is when the company -- when the other
7 people in the battery group decided to have -- we
8 might benefit from some message. I wasn't part of
9 that original group.

10 Q Okay.

11 So, would it be fair to say that laptop
12 computers that were manufactured and purchased prior
13 to that date would not have in its literature
14 contained information about this problem that you
15 only learned about in 2017 or so?

16 MS. MASTRIANO: Form.

17 A A message simply was an instruction to
18 not use unauthorized batteries. But, no, I don't
19 know of any other -- I don't know of any other
20 notification that has been given to the customers.

21 Q What I was getting at is that if the
22 problem -- if you weren't aware of the problem --

23 If HP wasn't aware of the problem until
24 sometime around 2017, then it is not really possible
25 that that particular problem was communicated to

CONFIDENTIAL

Page 108

1 customers who bought computers prior to 2017?

2 MS. MASTRIANO: Form.

3 A I am not aware of any communication to
4 customers --

5 MR. BETKE: Objection to the form.

6 Q I think that they objected over your
7 answer.

8 So, can you give your answer again so
9 the court reporter can get that?

10 A I am not aware of any other
11 communication except for the pop-up message to the
12 customers since 2017.

13 Q I am going to move on then to share the
14 screen again with you and just show you topic number
15 five, which is the:

16 "Battery authentication systems known
17 or available to HP prior to the incident to
18 detect and warn against counterfeit
19 replacement batteries, including battery
20 error messaging."

21 And I just want to turn up to the
22 definition section to provide you with a
23 specification of what we mean by the incident.
24 That was the January 24, 2020 incident that gives
25 rise to this litigation.

CONFIDENTIAL

Page 109

1 Okay?

2 A (No verbal response)

3 Q So, let's talk about battery
4 authentication systems.

5 Are you familiar with what that phrase
6 refers to?

7 A Could you help define what you mean by
8 authentication?

9 Q Are you aware that there have been and
10 are various ways that a device like an HP Pavilion
11 laptop can determine whether a particular battery
12 pack is an authorized battery pack for the device?

13 A Aware of the mechanisms that have been
14 used to address this concern, yes.

15 Q Okay.

16 And so, let's just talk about the
17 various systems and let me ask you if you agree.

18 So, there is one sort of simplistic way
19 of making sure that an authorized battery pack is
20 used in a particular laptop like the HP Pavilion and
21 that would be basically the form of the battery pack
22 and the pin construction, so to speak, of the battery
23 pack that we talked about previously, right?

24 A It's the mechanical piece especially
25 integrated for a customer replaceable battery as this

CONFIDENTIAL

Page 110

1 one, yes, those are custom -- those are custom made
2 for that period, yes. There is a mechanical team.

3 Q So, you can't just go into a computer
4 battery store and buy any old computer battery. It's
5 not going to fit in the laptop and it's not going to
6 have the pin construction that would be required to
7 connect to the motherboard, right?

8 A That's correct. There is not the
9 universal standardized battery like we have with a
10 flashlight. Correct.

11 Q So, that sort of the most simplistic
12 means of making sure that the battery pack that is
13 used in an HP Pavilion would work in HP Pavilion is
14 to have it -- it would have to have the same form, it
15 would have to have the same pin construction to
16 actually integrate with the motherboard, right?

17 A Correct.

18 Q So, that's sort of the most simplistic.
19 But then there are other means that can
20 be used for the computer, assuming that the form and
21 the pin construction is the same, would be the
22 computer to actually determine whether or not the
23 battery pack that has been installed is one that is
24 authorized, correct?

25 A Well, I understand the intention , yes.

CONFIDENTIAL

Page 111

1 Q So, let me just go through some of
2 those systems that are on the market to see if you
3 have an understanding of that.

4 I apologize. I will find the section
5 in my outline.

6 Now, one of those I am going to refer
7 to as an identification based authentication scheme.

8 Are you familiar with that phrase?

9 A Well, no.
10 Can you explain what you mean
11 specifically by that?

12 Q Sure.

13 In that type of scheme that I am using,
14 the laptop would send a command to read data from the
15 battery pack. And if the data coming from the
16 battery pack is the correct data, that the
17 motherboard is expecting, then that would be the
18 authentication step.

19 Are you familiar with that?

20 A Yes.

21 Q Was there any such system designed into
22 the HP Pavilion laptop computer that's at issue in
23 this case?

24 A No.

25 Q Has HP implemented any similar system

CONFIDENTIAL

Page 112

1 in any series laptops since the manufacture of this
2 particular laptop involved in this case?

3 A Yes.

4 Q And has it implemented this type of
5 authentication system or some other type of
6 authentication system?

7 A You mean a simple query from the
8 motherboard to the battery with a code, yes. That
9 was the change in 2019.

10 Q Now, the drawback of that type of
11 authentication system is that anyone who wanted to,
12 either counterfeit or have an unauthorized battery
13 pack, could use a oscilloscope to figure that out if
14 they bought a Pavilion laptop computer and the
15 battery pack that came with it, correct?

16 A Yes.

17 Q So, there are other systems that are
18 also available which are similar in a sense to
19 what many of us use to provide security when we
20 remote connect with computers where there is a
21 challenge and then a calculation using a secret key
22 that's in both systems, correct?

23 A Yeah, I understand that.

24 Q And has HP utilized any similar systems
25 with secret keys in the battery pack and in the -- in

CONFIDENTIAL

Page 113

1 the authorized battery packs and in the laptop which
2 allow for that type of security where both of those
3 secret keys are used to calculate a result that
4 matches?

5 A No. We have not used those.

6 Q Has that been looked into by HP as a
7 way to assure that the authorized battery packs are
8 actually the ones that are used in replacements?

9 A Yes.

10 Q What is the --

11 What was the decision one way or the
12 other as to whether or not to use that system or not,
13 to your knowledge?

14 A We haven't used it.

15 Q Was that a function because it would
16 add expense to the device?

17 A No.

18 Q What is the reason why HP has not used
19 that type of system?

20 A Those systems always break. They are
21 always -- they are just another speed bump. They are
22 just another hindrance that they are always able to
23 break. Always able to be broken.

24 Q Sure.

25 But does HP recognize that the cost of

CONFIDENTIAL

Page 114

1 breaking the authentication system would be a factor
2 in the profitability of the counterfeiting operation?

3 MR. BETKE: Objection to the form.

4 MS. MASTRIANO: Same.

5 A My opinion is that it will not
6 discourage -- it will not stop someone from stealing
7 the key and it will not stop someone from
8 refurbishing genuine HP battery packs.

9 Q Let me go back to the second part.

10 So, if the secret key were imbedded in
11 an authorized HP battery pack but the cells became
12 dysfunctional, someone could actually take that
13 battery pack out, replace the cells, keep the
14 integrated circuits that are included in that which
15 include the secret key, and that would be functional
16 under this type of authentication system?

17 A That's correct.

18 Q Now, the information you gave from your
19 study of some of these unauthorized battery packs was
20 that they lacked certain safety features, important
21 safety features.

22 You said they actually sacrificed all
23 of that and none of that functionality was included,
24 correct?

25 A It was very, very little. Yes. The

CONFIDENTIAL

Page 115

1 significant features were missing.

2 Q Do you know if HP has looked into some
3 mechanism within the motherboard of the laptop to
4 actually identify whether those safety systems are
5 included?

6 MR. BETKE: Can we put some time on
7 this -- timeframe on this, Steve? Because
8 the -- there is a little bit of a glitch
9 here. Because the laptop at issue was
10 designed and manufactured in, like, 2009
11 and 2010 and I think you have him talking
12 about 2023 or some version of that.

13 So, if you can put a time on that so
14 the witness knows what you are asking his
15 knowledge of.

16 MR. SCHWARZ: Okay.

17 Q So, let's go back.

18 I believe you said that this problem,
19 itself, became known to you and known to the company
20 at least by 2017, correct?

21 A Correct.

22 Q And so, these systems that we are
23 talking about as possible chores for this problem or
24 solutions to this problem would be ones that would
25 have been discussed after 2017?

CONFIDENTIAL

Page 116

1 A Correct.

2 Q And so, in that timeframe what I am
3 asking is was in addition to the authentication type
4 system that we have been talking about, whether it
5 would be the challenge response system or the secret
6 key calculation systems, in addition to those, was
7 there any --

8 Has there been any discussion since
9 2017 of programming the device, itself, to be able to
10 determine whether safety devices were actually
11 functional in the battery pack?

12 A I can't, no. I can't imagine how we
13 would be able to discern that remotely. No, I can't
14 think of a way that we would discern remotely that
15 there were -- what the construction of the battery
16 pack was.

17 Q So, in other words, from a
18 technological standpoint it would be in your
19 knowledge impossible for the motherboard to be able
20 to determine whether those cell balancing and
21 overheating over temperature devices were actually
22 functional on the battery pack.

23 A Undetectable. Undetectable if the term
24 -- if the goal was to disguise those. Yes,
25 undetectable.

CONFIDENTIAL

Page 117

1 Q I want to go back actually to the first
2 topic listed on the 30(b)(6) notice known as Exhibit
3 1. Let me just show you that.

4 And that topic says:

5 "All warnings, manuals, and
6 instructions issued by HP to purchasers of
7 HP Pavilion Series laptop computers similar
8 to the laptop --"

9 Which is the one at issue in this case.

10 "-- regarding replacement batteries,
11 including risks of using non-HP
12 manufactured replacement batteries, and the
13 method of communicating such warnings to
14 purchasers."

15 Do you see that?

16 A Yes.

17 Q Actually, after our discussion today, I
18 recognize that that's probably improperly phrased
19 because it isn't HP manufactured replacement
20 batteries. It's HP authorized replacement batteries
21 that we are talking about.

22 Correct?

23 A I am sorry. HP manufactured -- oh,
24 yes. Non-HP authorized batteries. I understand.

25 Q And my question, I guess, is as you

CONFIDENTIAL

Page 118

1 were preparing for this deposition, and your
2 testimony on the topic one, did the misstatement of
3 non-HP manufactured as opposed to non-HP authorized
4 batteries prevent you from understanding what it was
5 that we are asking about?

6 A No.

7 Q Okay.

8 Because you knew that HP didn't
9 manufacture any batteries. So, you assumed we were
10 talking because we were uneducated --

11 MR. BETKE: We read this. We did not
12 read this a ticky-tack manner to say,
13 "ah-ha, like, you messed up the question."
14 We understood you were requesting there
15 about non-authorized batteries.

16 MR. SCHWARZ: Thank you.

17 Q So, my next question then is Mr.
18 Atkinson, what effort did you make to determine
19 the information that was conveyed to purchasers of
20 laptops such as the one at issue in this case about
21 the risks and dangers of using unauthorized
22 replacement batteries?

23 A I looked to what was written;
24 specifically, this laptop.

25 Q And are you talking about in the

CONFIDENTIAL

Page 119

1 instruction manual for this particular laptop?

2 A Yes.

3 MR. BETKE: I think specifically it's,
4 like, Laptop Essentials or Notebook
5 Essentials, I think it's called.

6 THE WITNESS: Bates 2010.

7 MR. BETKE: Bates 2010?

8 Q What I am going to do is I am going to
9 show you what has been previously marked as Exhibit
10 5.

11 I am going to put that on the screen
12 now. I just have the cover page, which is HP00053.
13 It's entitled, to "Notebook PC User Guide."

14 Is that one of the documents that you
15 referred to in preparing to answer topic one?

16 A I'm sorry. I don't recognize this one.
17 Let me look at Bates 53.

18 MR. BETKE: Can you scroll down on it?

19 MR. SCHWARZ: Yeah.

20 MR. BETKE: I think that notebook
21 Essentials is maybe part of that, but it
22 may have been Bates as a separate document.

23 Q Let me just go to the table of
24 contents.

25 If that helps, I can make that bigger

CONFIDENTIAL

Page 120

1 so you can see it better.

2 A If you could.

3 MR. BETKE: Can you scroll?

4 MR. SCHWARZ: Sure.

5 MR. BETKE: Or better yet, Lee, if you
6 have access this is Bates -- this is Bates
7 53. If you want to just take us there and
8 pull that up yourself and then scroll down
9 to see if it includes -- it may have just
10 been the way that it was Bates, but if it
11 includes the 182 to 233.

12 MR. SCHWARZ: While you are doing that,
13 I am going to pick the page I want to start
14 on. And we can see if we are on the same
15 page.

16 THE WITNESS: This looks like the same
17 document. It looks the same.

18 MR. BETKE: Well, why don't we go with
19 these questions and see where that takes us
20 and then we can -- if you think there is
21 something somewhere else, we can go into
22 that.

23 THE WITNESS: Great.

24 Q So, I am going to start with page
25 HP00108 of Exhibit 5, where it says, "Using External

CONFIDENTIAL

Page 121

1 AC Power."

2 Now, this section on the other document
3 that you were referring to that covers the same
4 topics as this.

5 A Okay. Thank you. I see it.

6 Q Okay.

7 MS. MASTRIANO: I'm sorry, Steve.

8 What is the Bates number on this?

9 MR. SCHWARZ: HP00108.

10 MS. MASTRIANO: Thanks.

11 A I see it.

12 Q Okay.

13 Now, turning to HP00109, which is
14 listed as page 47 in the user manual, there is a
15 diagram or a pictorial description.

16 I just want to get some terminology
17 down.

18 This involves the AC adapter. So, this
19 indicates number one is called connect the AC adapter
20 to the power connector on the computer. And there is
21 a square box that we all are familiar with seeing in
22 any kind of AC adapters.

23 Is there a name for that?

24 A AC adapter is a good word. We call it
25 brick, but the AC adapter is an accurate name.

CONFIDENTIAL

Page 122

1 Q When you referred previously to the
2 brick, that's what you were referring to?

3 That's just another name for it, right?

4 A Yes.

5 Q And that's where the power in
6 alternating current is converted to a direct current
7 as used by the device itself?

8 A Yes.

9 Q Okay.

10 And if we scroll to page 111 of Exhibit
11 5, there is another pictorial diagram.

12 And this shows how you remove and
13 replace or reinstall a battery pack, correct?

14 A Yes.

15 Q Is that something that certain
16 computers can use batteries that were called
17 imbedded.

18 Is that a familiar term for you?

19 A Internal batteries, yes.

20 Q And imbedded or internal batteries are
21 batteries that are not easily replaceable by a user.
22 They would have to take the whole computer apart
23 basically to replace the battery.

24 Right?

25 A They are a little more -- you need

CONFIDENTIAL

Page 123

1 tools to replace an internal battery pack.

2 Q But for the one on the HP Pavilion,
3 similar to the device in question here, it had what
4 would be considered an easily removable battery and
5 easily replaceable battery, correct?

6 A Yes.

7 Q And then there is instructions in the
8 owner's manual about charging the battery.

9 And so, circumstances under which it
10 will take longer and shorter to charge the battery.

11 Is that correct?

12 A That's right. I am looking at the same
13 page you are. Yes.

14 Q And then, I want to skip to page
15 HP00116.

16 And particularly I want to ask you
17 about the replacing the battery section as well as
18 disposing of the used battery section.

19 But before I ask you specific -- what
20 it specifically says there, based on these two
21 sections, would you agree that it was understood and
22 foreseeable by HP that the useful life of the laptop
23 was likely to exceed the use of the life of the
24 battery that came with it when it initially
25 manufactured?

CONFIDENTIAL

Page 124

1 MR. BETKE: Objection to the form.

2 You can go ahead and answer, if you
3 understand.

4 MS. MASTRIANO: Same.

5 A Not necessarily a conclusion, no. I
6 wouldn't say that necessarily the battery would have
7 a shorter life than the laptop.

8 Q I am asking you was it reasonably
9 foreseeable that in certain circumstances that would
10 be true?

11 A In certain circumstances, yes, it's
12 possible.

13 Q And what you written here is --
14 Not you written here, but what HP has
15 in this manual. Excuse my phraseology on that.

16 What HP put in this manual is that
17 computer battery life varies depending on power
18 management settings, programs running on the
19 computer, display brightness, external devices
20 connected to the computer, and other factors.

21 So, I guess what it is indicating there
22 is that depending on how you use the computer the
23 battery may well exceed its useful life before the
24 laptop does, correct?

25 A No, that's not how I interpret this.

CONFIDENTIAL

Page 125

1 Computer battery life has two different
2 meanings. One is the longevity of the battery. The
3 other one -- and measured in years or cycles. And
4 the other one is how many hours. So, here when it
5 talks about display brightness and other devices
6 connected, that's talking about the run time of the
7 battery.

8 Q Okay.

9 A But not longevity.

10 Q But the run time of the battery would
11 not require replacement, would it?

12 A Correct.

13 But let me look at the text right here
14 to understand the context better.

15 MR. BETKE: Steve, are you asking
16 whether HP knew people might replace the
17 batteries?

18 MR. SCHWARZ: That's what I am asking.

19 THE WITNESS: Yeah, of course we --

20 MR. BETKE: It's replacing the battery.

21 I think we are getting hung up on
22 nomenclature. That's why I'm cutting in.

23 The question is, is HP aware that
24 people might replace the battery.

25 I think this very document clearly

CONFIDENTIAL

Page 126

1 indicates, yeah, people might replace the
2 battery depending on whatever reason.

3 MR. SCHWARZ: Okay. That's the bottom
4 line. And if you are stipulating to that
5 then --

6 MR. BETKE: Well, he is testifying to
7 it.

8 Why don't you ask him? I am not in
9 position to stipulate for the client.

10 But was HP aware that people might
11 replace the battery as indicated by this
12 document which says replacing the battery?

13 MR. SCHWARZ: I will adopt that
14 question.

15 THE WITNESS: Yes, of course.

16 MR. BETKE: Might it be time for a
17 quick break? Another restroom break?

18 MR. SCHWARZ: Sure.

19 MR. BETKE: And also, Steve, if you
20 could while we are taking a break, maybe if
21 you can give some thought on how much
22 longer you think you will have. I am not
23 trying to limit you or anything. I'm just
24 trying to figure out -- it's 10:30 Lee's
25 time so I'm trying to get --

CONFIDENTIAL

Page 127

1 MR. SCHWARZ: I believe I will be done
2 before noon.

3 MR. BETKE: That sounds great.

4 THE WITNESS: That's great.

5 MR. BETKE: Because --

6 Off the record.

7 (Whereupon, a discussion was held off
8 the record)

9 VIDEOGRAPHER: The time is 10:21 p.m.,
10 and we are off the record.

11 (Whereupon, a short break was taken)

12 VIDEOGRAPHER: The time is 10:29 p.m.,
13 and we are back on the record.

14 Q I am going to share the screen again to
15 show page HP00110 of the user manual for the computer
16 that we marked as Exhibit 5.

17 Can you see that?

18 A Yes.

19 Q Let me blow it up a little bit.

20 So, the only reference I could find in
21 here is that in the user manual concerning the type
22 of replacement battery to utilize if the replacement
23 battery is needed is under this "Using Battery Power"
24 heading of the manual and the warning that is listed
25 here that is on the page.

CONFIDENTIAL

Page 128

1 Do you see that?

2 A Yes, I see that.

3 MR. BETKE: Steve, what page is this?

4 MR. SCHWARZ: HP00110.

5 MS. BETKE: Okay.

6 Q And this warning says:

7 "To reduce potential safety issues, use
8 only the battery provided with the
9 computer, a replacement battery provided by
10 HP, or a compatible battery purchased from
11 HP."

12 Did I read that correctly?

13 A Yes.

14 Q Now, what potential safety issues were
15 intended to be referenced there, to your knowledge,
16 and based upon your study of the warnings that were
17 provided?

18 A In that time, I don't -- I am not sure
19 there was a specific -- a specific safety item
20 mentioned. I think it was just generally trying to
21 discourage anybody with a homemade battery or some
22 other power source. I don't believe that there was a
23 specific -- a specific alternative battery even
24 mentioned here. I am not sure there were any kind of
25 clone battery market even really in that time.

CONFIDENTIAL

Page 129

1 Q Okay.

2 So, the dangers that you've discovered
3 in your analysis of some of the what you call the
4 cloned or unauthorized batteries of having none of
5 the safety devices, that information wasn't even
6 known at the time in 2010 when this manual was
7 written.

8 Is that what your testimony is?

9 A I think there were some vague
10 understanding that there might be counterfeits, but,
11 no, there was nothing in the way of the ultimate
12 sales of replica, cloned batteries that we have now.
13 It wasn't there at all.

14 Q And again --

15 A And --

16 Q I'm sorry. I spoke over you and I
17 apologize for that.

18 And just a final point on that, your
19 awareness that there were cloned batteries out there
20 that had none of the safety features that were
21 required by the authorized batteries, that didn't
22 happen until after the time that this manual was
23 written, correct?

24 A Yes. That was really about four or
25 five years ago for me. Yes.

CONFIDENTIAL

Page 130

1 Q And in your discussions and preparation
2 for your testimony today, did you discover that there
3 were other people in the company that had concerns
4 about these counterfeit batteries prior to 2017?

5 A I haven't found anybody who -- I am
6 sorry -- awareness of counterfeit batteries but know
7 that these are exceptional -- those are exceptional
8 and I think virtually nonexistent. I think those
9 were limited to counterfeits only.

10 No, I haven't found anybody before that
11 time who recognized -- who was aware of a significant
12 problem or a significant number of these kind of
13 batteries.

14 Q And by these kind of batteries, you are
15 talking about the counterfeit batteries that had none
16 of the safety devices that were required for the
17 authorized batteries?

18 MR. BETKE: Unauthorized, right? I
19 don't want you to be caught up
20 nomenclature.

21 A Yeah. Counterfeit are like cloned
22 batteries. But these ones that don't have an HP
23 brand, I don't think we were aware of those at all in
24 2009 when this battery was designed.

25 Q Again, does that mean --

CONFIDENTIAL

Page 131

1 I don't mean to get caught up in a
2 nomenclature.

3 What I am trying to get at is whether
4 they had an HP brand or not, at the time that this
5 manual was written, are you saying that HP was
6 unaware that there were batteries out there whether
7 they be unauthorized or counterfeit that lack the
8 safety features that HP required for authorized
9 batteries?

10 A Vaguely we knew that some existed, but
11 it was a -- but those were basically elicit product.
12 There was really no awareness of these kind of --
13 these battery packs. No awareness of a problem with
14 these battery packs then. I never remember any
15 discussion about that; I will say that.

16 Q Okay.

17 And that's what I am getting at.

18 In other words the knowledge that not
19 only there were unauthorized battery packs but there
20 were unauthorized battery packs that lacked certain
21 very important safety features.

22 That knowledge was gained you think
23 sometime after the time that this was written?

24 A Yes.

25 Q So, in your analysis of information on

CONFIDENTIAL

Page 132

1 replacing batteries --

2 Withdraw that question.

3 Do you have any knowledge as to why
4 this warning was not included or repeated under the
5 section we previously looked at which was entitled
6 "Replacing the Battery"?

7 A No idea.

8 Q To your knowledge, was there any other
9 warning provided to purchasers of these HP Pavilion
10 laptops in or about 2010 or 2011 about the potential
11 hazards of replacing the battery with an unauthorized
12 HP battery other than this one warning that we found
13 on page 110?

14 A I'm only aware of one other, which is
15 210.

16 Q Is 210 within this document or a
17 different document?

18 A I think different document.

19 Q Okay.

20 Tell me what is your understanding of
21 what that second document is and whether it was
22 included in the literature that was provided with
23 these laptops or it was provided some other way?

24 MR. BETKE: Lee, can you share that
25 document for --

CONFIDENTIAL

Page 133

1 Steve, can he share that document? Are
2 you able to --

3 MR. SCHWARZ: Sure. I mean, we can ask
4 the videographer to allow him to screen
5 share.

6 MR. BETKE: Is that okay, Lee?

7 THE WITNESS: Yes.

8 MR. BETKE: Just so everybody is
9 looking at the same thing. It starts at --
10 I think it's Bates 182.

11 A Can you see the share?

12 Q Yes, we can see.

13 MR. BETKE: We can see it.

14 (Document was marked as
15 Plaintiff's Exhibit 8 for
16 identification, as of this
17 date)

18 MR. SCHWARZ: What we will do is we
19 will mark this as Exhibit 8. At some point
20 after the deposition, I will take care of
21 that. I will find that document or if you
22 can e-mail it to me, that would be great
23 and --

24 MR. BETKE: It was produced. It's
25 Bates 182.

CONFIDENTIAL

Page 134

1 MR. SCHWARZ: Right. I think one of
2 the problems with the production was that
3 they contained links that died so we didn't
4 download --

5 MR. BETKE: I am happy to send it to
6 you. I can send it to you now, if you
7 want.

8 MR. SCHWARZ: That would be great.

9 MR. BETKE: Hang on one second. I will
10 send it to you.

11 MR. SCHWARZ: Thank you.

12 MR. BETKE: And just for the record if
13 you ever find yourself in a circumstance
14 where a link died or whatever, just shoot
15 us an e-mail and we will send you whatever
16 you need.

17 MR. SCHWARZ: I will do that.

18 MR. BETKE: All right. Hang on. I am
19 going to try to do this. I will send it to
20 everybody. Just for completeness I will
21 send it to you, Jackie and to you, Maria,
22 too.

23 MR. SCHWARZ: Once I get it, I will
24 mark it and put it in the same folder as
25 the other marked exhibits.

CONFIDENTIAL

Page 135

1 MR. BETKE: All right. I sent that.

2 In the meantime, Lee, you have that up
3 on the --

4 MR. SCHWARZ: Yeah, we are good with
5 what is on the screen.

6 Thank you very much for doing that.

7 MR. BETKE: Let's go ahead, if we can.

8 Q So, you scrolled to page HP00210.

9 Would you do me a favor and just scroll
10 to the page before to see what the heading is that
11 this is under.

12 It's under the heading, "Using the
13 Computer Safely," is that correct?

14 A Yes.

15 Q And then, if you could scroll to the
16 next page.

17 Is the warning you are referring to the
18 only one on this page which says:

19 "To reduce potential safety issues use
20 only the AC adapter or battery provided
21 with the computer, a replacement AC
22 adapter, or a battery provided by HP, or a
23 compatible HP adapter, or a battery
24 purchased as an accessory from HP."

25 A Yes.

CONFIDENTIAL

Page 136

1 Q Okay.

2 And that's essentially the same warning
3 that we read from the Exhibit 5 except it includes a
4 reference to the AC adapter as well as the battery?

5 A Yes.

6 Q And what is your understanding of this
7 essential document we marked as Exhibit 8?

8 In other words, is that something that
9 was provided to purchasers of these Pavilion laptops
10 at the time of purchase?

11 A I don't know how it was provided. And
12 I can't distinguish it from the other document that
13 we saw. They seem to be very similar.

14 Q Okay.

15 So, it's possible that either one or
16 the other was provided and not both?

17 A I think so.

18 Q In addition --

19 Withdraw that question.

20 With regard to the other warning we
21 talked about at the time that that warning was put
22 into the user manual, that that was before you and HP
23 became aware of the unauthorized battery packs that
24 lacked these safety features that were out on the
25 market?

CONFIDENTIAL

Page 137

1 A Before we were aware of -- aware of any
2 danger from -- really aware that they were really
3 available.

4 Q So, did you find any other then
5 information that was provided to purchasers of the HP
6 Pavilion laptops in the 2010 to '11 period that
7 warned about the use of unauthorized replacement
8 batteries other than the two that we've looked at
9 from these two similar documents?

10 A No.

11 Q Now, since 2017, when you became aware
12 and HP became aware of this problem that we talked at
13 length about with unauthorized HP battery packs that
14 would work with an HP computer, Pavilion computer,
15 that lack safety features --

16 Withdraw that question. I am sorry.

17 Let me start again.

18 After 2017 when you became aware there
19 were unauthorized battery packs without safety
20 features that would work in HP Pavilion computers,
21 what steps did HP take to notify previous purchasers
22 of HP computers who might potentially buy
23 unauthorized batteries warning them about the safety
24 issues associated with that?

25 A I am not aware of any. Besides these

CONFIDENTIAL

Page 138

1 warnings, I am not sure of any other notification.

2 Q But since the time that these warnings
3 were devised, the nature of the risk became much
4 better categorized based upon your work in analyzing
5 this unauthorized battery packs that lack safety
6 devices, correct?

7 A I'm sorry.

8 Would you please repeat that question
9 again?

10 Q Yeah.

11 Since the time the two warnings that we
12 just looked at in the two documents were devised,
13 since that time, years later in 2017 approximately
14 you said, you learned the scope of the danger of not
15 only the scope of the number of these battery packs
16 that are out there, but also the scope of the danger
17 created by them lacking the safety devices. That is
18 all information you did not have in 2010 and 2011.

19 Correct?

20 A That's probably fair, yes.

21 Q So, that's my question.

22 In other words, once you did know the
23 scope of the risk and the scope of the volume of
24 these dangerous battery packs, what action did HP
25 take to notify people who had purchased and

CONFIDENTIAL

Page 139

1 registered HP Pavilion laptops to warn them about
2 this new danger that you discovered the scope of in
3 2017?

4 A I don't think that there was exactly a
5 turning point or a sudden moment of discovery. I am
6 not sure -- and so, I think that our response in 2017
7 was what we could do with new computers and the
8 so-called counterfeit error message. For previous --
9 for prior purchasers, I don't know if there was any
10 other communication. I don't know of any other
11 communication to customers.

12 MR. SCHWARZ: Can you switch back,
13 videographer, please, Alexa, to allow me to
14 share the screen?

15 MR. BETKE: I was hoping we are going
16 to stay in control the rest of the way,
17 Lee. Joke for the record. That's a joke.

18 MR. SCHWARZ: I am smiling.

19 MR. BETKE: Let the record reflect that
20 Mr. Schwarz is smiling.

21 Q Returning to Exhibit 1, let me blow
22 this up. Topic number eight. Excuse me. Seven.
23 That you were produced here to answer was whether:

24 "Any post-manufacturer and sale
25 warnings or instructions were provided to

CONFIDENTIAL

Page 140

1 HP Pavilion Series laptop computers
2 regarding replacement batteries, risks of
3 fire or explosion of lithium-ion batteries
4 and the method by which any such warnings
5 or instructions were provided to prior
6 purchasers."

7 A Yes.

8 Q And you understand that although you
9 don't necessarily have personal knowledge of whether
10 any post-manufacture and sale warnings or
11 instructions were provided, but that was one of the
12 topics that you were supposed to educate yourself
13 about to testify today on behalf of the company.

14 And your response that you know of no
15 such post-manufacture of sale warnings or
16 instructions is an indication that HP provided no
17 such post manufactural warnings and instructions; do
18 you understand that?

19 A At least what my testimony was that the
20 message that we have since the owner's manual, I
21 think has persisted until today. We augmented that
22 in 2019 with the extra notifications.

23 I think your question is whether there
24 was any other communication. And then, I said I am
25 not aware of any other communication.

CONFIDENTIAL

Page 141

1 Q But I am saying that as a 30(b)(6)
2 witness produced here today on this topic, you are
3 required to be aware on behalf of HP, and if you are
4 not aware, that means that there were no such
5 communications.

6 Do you understand it as that?

7 MR. BETKE: Objection to the form.

8 Go ahead.

9 A That's correct.

10 MR. BETKE: By the way, just to
11 clarify, the warning you referenced are all
12 on HP.COM still. So, in other words, I
13 don't want us to get -- that was there then
14 and it's there now. So, that's always -- I
15 think when he said it's always persisted,
16 that's one of the things he is referring
17 to.

18 THE WITNESS: Yeah.

19 Q Okay.

20 Well, were any additional warnings
21 beyond the warnings that you've shown us from the two
22 documents, from the 2010 era, were any additional
23 warnings about replacement batteries for HP Pavilion
24 laptops posted on the HP website?

25 A No, none that I know of.

CONFIDENTIAL

Page 142

1 Q And again, that would be something that
2 would be in topic seven that you were supposed to
3 make yourself aware of?

4 A I understand.

5 Q During your --

6 And again, if any of this is
7 privileged, then obviously don't answer this
8 question, but in your investigation of the prior
9 battery packs that turned out to be unauthorized
10 battery packs but lacked the safety features that we
11 have been discussing were required for the authorized
12 battery packs, did you determine who the manufacturer
13 was in any of those cases?

14 A No.

15 Q I am going to share the screen again.

16 I will show you what I previously
17 marked as Exhibit 7.

18 And I will represent to you that this
19 is just an exemplar battery pack of the type that was
20 used in the Pavilion Series HP laptops.

21 And my question is did the battery
22 packs that you looked at that turned out to lack the
23 safety devices required to be authorized battery
24 packs, did they look identical to this in shape,
25 form, and color?

CONFIDENTIAL

Page 143

1 A Not to this battery pack, no.

2 Q How did they differ?

3 A It was a previous generation of battery
4 pack, but not this specific -- not this line of
5 battery packs.

6 Q Okay.

7 MR. BETKE: It's impossible to tell
8 size from this. I don't think there is a
9 measurement. I don't know how he can --

10 MR. SCHWARZ: Okay.

11 Q Now, I am going to show you what we
12 marked as Exhibit 6.

13 I will represent to you that this is a
14 photograph of the circuit board in the battery pack
15 that was in the subject laptop computer.

16 And I just want you to confirm that the
17 pin structure here on this laptop that's pointed out
18 with the diagram is the same pin structure that was
19 required for the authorized battery packs?

20 A Yeah. I remember you pointed out
21 browned on both ends, but I can't remember -- and we
22 have the no -- we have the open pin. So, the pin
23 name looks familiar. The same -- I assume that they
24 -- I assume that there is a match, yes.

25 Q So, basically, a non-authorized

CONFIDENTIAL

Page 144

1 manufacturer could duplicate this pin placement just
2 by reverse engineering an authorized battery pack,
3 correct?

4 A Yes.

5 Q And an unauthorized manufacturer could
6 also create the identical size and shape that would
7 fit in the Pavilion laptop so such a battery could
8 function?

9 A Yes.

10 Q And there is absolutely no way for --
11 Withdraw that question.

12 And prior to the new error message that
13 you say was incorporated into later models of HP
14 laptop computers, there would be no way for a user to
15 know that an unauthorized battery was in their
16 computer?

17 MS. BETKE: Objection.

18 I assume you mean by a pop-up.

19 MR. SCHWARZ: I mean, there would be no
20 message. There would be no function of
21 loss. There would be nothing that would
22 indicate to the user that an unauthorized
23 battery was operating the system.

24 MR. BETKE: Objection to the form.

25 Lee --

CONFIDENTIAL

Page 145

1 MS. MASTRIANO: Same.

2 A I think in -- we testified that before
3 2017 there wasn't even a discussion for -- so, no we
4 did not have any pop-up message before 2019. And so,
5 yes, it was possible for someone to make -- it's
6 possible for someone to make a battery that is
7 functionally looks like an HP battery.

8 Q It looked like and actually functioned
9 the same way without the safety devices?

10 A Yes.

11 MR. SCHWARZ: Let's take a break. I
12 just want to check my outline. I might pass
13 the witness, if any further questions are
14 going to be asked.

15 Just give me five minutes.

16 MR. BETKE: Great, Steve. Thank you.

17 VIDEOGRAPHER: The time is 10:57 p.m.,
18 and we are going off the record.

19 (Whereupon, a short break was taken)

20 VIDEOGRAPHER: The time is 11:04 p.m.,
21 and we are back on the record.

22 Q Mr. Atkinson, I have one more topic
23 area I would like to cover and I just need to cover
24 that. And I am going to put it back on the screen.

25 And it is topic six which reads:

CONFIDENTIAL

Page 146

1 "Reports received by HP of fires and
2 explosions caused by overcharging
3 lithium-ion batteries in HP Pavilion Series
4 laptop computers and investigations of any
5 such incidents."

6 Is that a topic that you came here
7 prepared to testify about today?

8 A Yes.

9 Q And what have you done to educate
10 yourself on that particular topic?

11 A I've talked with counsel to see what
12 evidence we have or what we have from this.

13 Q And what evidence did you review to
14 determine whether there had been any reports of such
15 incidents of other HP Pavilion laptop computer
16 batteries malfunctioning in this way?

17 A I think we have no evidence of
18 overcharging being a cause or any language between
19 overcharging and the fires or even -- you know, I
20 don't think we have any -- I don't think we have
21 reports of overcharging in lithium-ion batteries.

22 Q So, are you saying then that you found
23 reports of fires and explosions that were not caused
24 by overcharge?

25 A I think that there was one report of a

CONFIDENTIAL

Page 147

1 suspicion that I think is actually in the Bates
2 documents here.

3 Q That's the only other fire or explosion
4 of an HP Pavilion laptop battery that you are aware
5 of?

6 A In this series laptop, yes.

7 Q Are you aware of other series laptops,
8 battery fires and explosions that were not of this
9 particular series?

10 A I am aware of other reports of other
11 incidents where there were fires. Yes, there were
12 some.

13 Q And were those other incidents
14 involving replacement batteries that were
15 unauthorized?

16 MR. BETKE: He's testified to that.

17 A Yes.

18 Some with -- yes. Some with
19 third-party batteries.

20 Q Do you know the dates of those
21 incidents?

22 A I can't remember. I think -- no, I
23 can't remember. I think that was even -- I can't
24 remember. I think it was about 2016 or something,
25 but I am not sure.

CONFIDENTIAL

Page 148

1 Q Was it your investigation of one of
2 those incidents that led you to learn that some of
3 these replacement unauthorized batteries lack the
4 important safety features?

5 A Yes.

6 MR. SCHWARZ: I believe those are all
7 the questions I have for you, Mr. Atkinson
8 today.

9 And I will turn you over to counsel for
10 Staples who has some questions for you.

11 EXAMINATION

12 BY MS. MASTRIANO:

13 Q Good morning.

14 I am Maria Mastriano, and like he said,
15 I represent Staples, Inc.

16 He asked -- I had five minutes of
17 questions, but he just asked most of them. So, I
18 just have a couple.

19 The first is I know that you were just
20 discussing any reports of overcharging related to
21 fire, correct?

22 A Yes.

23 Q Of an HP battery?

24 A Well, he was talking about --

25 MR. BETKE: I think aftermarket.

CONFIDENTIAL

Page 149

1 A In your reports, yeah, of overcharging,
2 yes.

3 Q So, I'm sorry. Just to understand.
4 Do you have any evidence or any prior
5 knowledge of any prior incidents of an HP authorized
6 battery overcharging causing a fire?

7 A As far as the question of overcharging,
8 no, I am not sure of discrimination for overcharging
9 but we have had HP batteries and fires before, yes.
10 Or HP have been in fires before.

11 Q Do you know how many reports you have?

12 MR. BETKE: I am going to object and
13 just ask you, Lee, to limit your answers to
14 LG Chem because LG Chem is the battery
15 pack.

16 MS. MASTRIANO: I agree.

17 MR. BETKE: So, if it's Sony or
18 something else, that's not involved in
19 this.

20 MS. MASTRIANO: Agreed. Thank you.

21 I should have limited it.

22 Q So, in terms of fire, we are talking
23 about specifically with what your counsel said, LG
24 manufactured.

25 A No. I don't know -- I don't have -- I

CONFIDENTIAL

Page 150

1 don't know how many reports there have been of
2 batteries in fires, no.

3 Q Do you know if you ever received any
4 reports, not of a fire, but of the battery
5 overheating?

6 A Overheating?

7 Q Again, limited to this, to the subject
8 battery that we are talking about.

9 A No. Related to this battery pack,
10 that's -- it's Bates stamped -- hold on -- 1335, I
11 think. Let me see.

12 MR. BETKE: Yeah, 1335.

13 MS. MASTRIANO: Got it. Thank you.

14 MR. BETKE: And to be honest, I am not
15 even sure if that's an LG Chem pack in that
16 one.

17 THE WITNESS: Right. I don't think we
18 had -- I don't think --

19 MR. SCHWARZ: I don't think we figured
20 that out.

21 THE WITNESS: Yup.

22 Q Lee, to the best of your knowledge, has
23 anyone from HP ever talked to Staples about any
24 issues related to counterfeiting or third-party
25 batteries?

CONFIDENTIAL

Page 151

1 MR. BETKE: I am going to object on the
2 30(b)(6) aspect of this because that wasn't
3 one of the categories.

4 But I will absolutely allow Lee to
5 testify since he is sitting here and you
6 have been kind enough, you know, to sit
7 through this morning.

8 I will certainly let Lee tell you what
9 he knows about this.

10 MS. MASTRIANO: Okay.

11 A I have no idea.

12 Q Do you know who would know?

13 MR. BETKE: Objection.

14 Same objection.

15 A I don't know.

16 Q Do you know if anyone from HP ever
17 talked to Staples about any battery overheating?

18 MR. BETKE: Same objection.

19 A I don't know.

20 MS. MASTRIANO: Chris, I understand --
21 I have two more questions -- if you just
22 want to say it's going to be a continuing
23 objection?

24 MS. BETKE: Okay.

25 Q You don't know?

CONFIDENTIAL

Page 152

1 A I don't know.

2 Q Do you know if anybody from HP has ever
3 talked with anybody from Staples about the subject
4 type of battery overheating?

5 MR. BETKE: I have a standing
6 objection, did you say?

7 MS. MASTRIANO: (Nodding)

8 MR. BETKE: All right. I'm sorry. I
9 didn't quite --

10 A No, I am not aware of any.

11 Q Do you know who would know?

12 Is there a department?

13 And even if there is not a specific
14 name.

15 A No, I don't know.

16 MS. MASTRIANO: I think you'll like me
17 best today because that's all my questions.

18 MR. BETKE: I have no questions.

19 MR. SCHWARZ: I have nothing further.

20 MR. BETKE: Thank you so much.

21 Again, thank you everyone to be kind
22 enough to accommodate the time zone. We
23 very much appreciate it.

24 Mr. Atkinson, you can disable your
25 video and microphone and go to bed.

CONFIDENTIAL

Page 153

1 THE WITNESS: Thank you.

2 VIDEOGRAPHER: We are off the record at
3 11:13 p.m., and this concludes today's
4 deposition given by Lee Atkinson.

5 The total number of media units used
6 was five and will be retained by Veritext.

7 (11:13 a.m.)

8

9

10

11

LEE WARREN ATKINSON

12

13

14

Subscribed and sworn to before me

15

this ____ day of _____, 2023

16

17

18

19

20

NOTARY PUBLIC

21

22

23

24

25

CONFIDENTIAL

Page 154

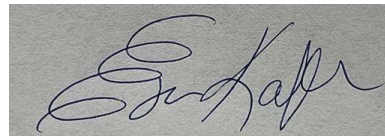
C E R T I F I C A T E

I, Eva Kaflinski, a Shorthand Reporter
and Notary Public of the State of New York,
do hereby certify:

That the witness whose examination is
hereinbefore set forth, was duly sworn, and
that such examination is a true record of
the testimony given by such witness.

I further certify that I am not related
to any of the parties to this action by
blood or marriage; and that I am in no way
interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set
my hand this 21st day of August 2023.

A rectangular box containing a handwritten signature in dark ink. The signature is cursive and appears to read "Eva Kaflinski".

EVA KAFLINSKI

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25

WITNESS' NAME: Lee Atkinson *Confidential*

[illegible]

Lee Atkinson *Confidential*

SUBSCRIBED AND SWORN TO
BEFORE ME THIS _____ DAY
OF _____, 20__.

NOTARY PUBLIC
MY COMMISSION EXPIRES

CONFIDENTIAL

[& - 51-17]

Page 1

&	13202 2:18	2011 132:10	3.1.1 66:7
& 2:8,12	133 4:7	138:18	3.1.2 67:1
0	1335 150:10,12	2016 147:24	3.1.3 70:6
00704 1:14	1368 46:7	2017 107:6,15	3.1.4 70:25
6:24	1377 26:5	107:24 108:1	3.2 37:1
01366 26:4	14221 2:14	108:12 115:20	30 3:12 13:16
01371 46:22	14618 2:5	115:25 116:9	13:20 15:15
02110 2:10	148 3:5	130:4 137:11	23:10,15 25:12
0483 20:12	15 11:6	137:18 138:13	117:2 141:1
1	16 65:15	139:3,6 145:3	151:2
1 2:5 3:12 8:10	175 2:10	2019 89:10	35 9:14
15:11 80:22	182 120:11	105:13,16	38 3:19
117:3 139:21	133:10,25	112:9 140:22	4
1.1. 42:20	1882 2:5	145:4	4 3:18 56:1,21
1.2.2 59:18	19 69:2	2020 108:24	58:2 60:11
10 11:6 46:8	1980s 9:16	2023 1:18 6:3	70:3 72:23
10:21 127:9	1983 9:22 10:3	115:12 153:15	93:16,22
10:29 127:12	1998 43:2	154:18	45 46:14,19
10:30 126:24	1:21 1:14 6:24	210 132:15,16	52:24 53:12
10:57 145:17	2	215 2:18	55:1,5 87:24
11 137:6	2 1:18 3:14	218 2:14	46 47:4,13 48:3
110 132:13	21:9,18	21st 154:18	48:12 49:9
111 122:10	2.4 28:12	233 120:11	50:10 51:9,12
11687 154:22	2.4.1 30:6	24 108:24	51:14 53:12
11:04 145:20	2.5 31:6	2nd 6:3	74:2,8
11:13 153:3,7	2.6 32:5	3	47 121:14
12 3:17 40:24	20 155:22	3 3:16 25:22	5
126 2:18	2006 15:4	27:20 30:6	5 3:15,20 16:1
129 3:21	2009 115:10	38:19 41:13	16:2 41:1,14
1297 20:4	130:24	42:16 44:10	119:10 120:25
1301 58:2	2010 115:11	45:1 46:6,7,23	122:11 127:16
1306 70:2 71:1	119:6,7 129:6	57:15 80:23	136:3
1316 64:9	132:10 137:6	93:16,18	51-17 8:23
	138:18 141:22	3.1 61:4	

CONFIDENTIAL

[52 - address]

Page 2

52 4:8	9	135:20,21	81:18
53 119:17	9 27:4,5,9,10,24	136:4	actually 16:20
120:7	29:6 31:1	acceptable	38:9 53:19
530 20:12	34:24 35:9	44:25	54:13 63:7,24
6	46:3 51:21	access 21:13	63:25 67:17
6 3:12,13,16,22	57:16 74:1	120:6	73:17 75:12
13:16,20 15:15	90s 14:7 43:2	accessed 45:4	76:5 87:23
16:3 23:10,15	9:15 88:12	accessory	89:4 91:11
25:12 27:6,8	a	135:24	96:3,16 97:4
27:20,24 28:4	a&m 9:21 10:2	accommodate	99:11,18,18
29:7 34:24	a.m. 1:18 153:7	152:22	110:16,22
35:9 41:20	a11 3:18 56:23	accomplish	113:8 114:12
42:2 44:12	abide 37:13	49:14	114:22 115:4
45:10 46:2	ability 29:20	accomplished	116:10,21
57:13,17 59:19	51:16 74:20	49:25	117:1,17 145:8
60:1 93:17	76:5,10 81:23	accuracy 53:6	147:1
117:2 141:1	82:7	55:1,4 87:4	acutely 106:21
143:12 151:2	able 20:9 40:24	accurate 31:11	106:24
6245 2:14	92:12 100:7	53:8 55:3 57:4	adapter 121:18
7	104:10 113:22	121:25	121:19,24,25
7 4:6 8:11	113:23 116:9	accurately 87:6	135:20,22,23
142:17	116:13,19	acdc 68:21	136:4
718-983-1234	133:2	acquainted	adapters
155:2	above 1:23	18:17	121:22
7:09 1:18 6:2	45:20 47:13	acquiring 97:4	add 113:16
8	48:12 49:9	action 7:6,24	addition 19:4
8 3:4,12,14,16	51:9,14 62:17	72:20 86:1,19	21:13 97:2
3:18,20,22 4:6	absolutely	92:8 99:1	102:11 116:3,6
4:7 133:15,19	41:11 56:7	101:18,22	136:18
136:7	144:10 151:4	138:24 154:13	additional 19:7
8/2/2023 155:3	ac 67:17 68:1,1	activated 72:7	76:6 87:8
8:18 56:12	68:18,21 69:3	actively 82:14	141:20,22
8:27 56:15	69:21 76:7	activity 99:18	address 8:22
	121:1,18,19,22	actual 18:9	103:11 109:14
	121:24,25	31:13 73:21	

CONFIDENTIAL

[addresses - atkinson]

Page 3

addresses 40:16,17	alleged 11:21 12:21 13:6	answers 16:15 87:17 149:13	approximately 11:5 46:14
adjacent 31:10	allow 23:7	anybody 97:8	138:13
administer 5:13 7:4	31:12 75:7	128:21 130:5	area 10:12
administrator 1:5,7 6:17,19	113:2 133:4	130:10 152:2,3	16:19 18:19
adopt 126:13	139:13 151:4	anymore 101:22	145:23
advance 26:23	allowable 46:9	apart 122:22	art 52:16
affected 69:15	46:12	apologize 54:17	asked 85:19
affiliations 7:13	allowed 67:11	55:20 111:4	145:14 148:16
aftermarket 91:6 106:19	allows 66:16	129:17	148:17
148:25	67:16	appear 38:9	asking 9:2
afternoon 6:1	alogous 93:17	39:16 65:7,14	28:22 78:6
ago 90:5,5,7	alternating 122:6	92:10 105:11	90:12 105:3
97:10 106:3	alternative 128:23	appearance 7:10	115:14 116:3
129:25	analogies 33:10	appearances 7:12	118:5 124:8
agree 6:11	analysis 102:16	appearing 70:9	125:15,18
109:17 123:21	129:3 131:25	appears 65:15	aspect 151:2
149:16	analyze 99:18	apply 79:20	aspects 14:4
agreed 5:3,18	analyzing 138:4	appreciate 66:3	assignment 155:2
149:20	answer 16:8	152:23	assisted 43:20
ah 118:13	19:8,21 21:1	approval 3:18	associated 99:25 137:24
ahead 23:22	23:14 24:21	56:23 57:6	assume 33:24
83:8 124:2	41:6 52:4,6,11	93:23,25 95:3	87:5 143:23,24
135:7 141:8	57:10 80:12	approve 57:19	144:18
alert 89:14	81:13 83:9	63:11 93:20	assumed 118:9
alexa 2:23 6:25	86:3 87:5,10	approved 28:24 29:3,6	assuming 110:20
20:16,19	93:13 97:24	30:7 34:23	assure 113:7
139:13	98:4 102:6	63:7 70:4	atkinson 1:22
allegations 12:16	108:7,8 119:15	78:12 94:13,17	3:4 6:14 8:14
	124:2 139:23	94:22	8:21,25 21:18
	142:7		24:15 26:24
			37:19 56:17

CONFIDENTIAL

[atkinson - batteries]

Page 4

88:17 90:21 106:3 118:18 145:22 148:7 152:24 153:4 153:11 155:4 155:20 attorney 7:14 98:1 attorneys 2:4,9 2:13,17 5:4 20:24 26:8 augmented 140:21 august 1:18 6:3 154:18 authentic 103:22 authentication 108:16 109:4,8 111:7,18 112:5 112:6,11 114:1 114:16 116:3 autho 94:24 authorized 5:12 7:4 93:11 93:19 94:14,22 95:4 109:12,19 110:24 113:1,7 114:11 117:20 117:24 118:3 118:15 129:21 130:17 131:8 142:11,23 143:19,25 144:2 149:5	automatically 48:5,7 availability 96:8 available 26:7 29:5 47:12,18 59:12 69:8 105:11 108:17 112:18 137:3 avoid 35:5 85:5 92:12 aware 21:21,24 22:3 24:16,19 25:18,19 91:14 91:15 92:2 94:19,25 95:2 95:5,25 96:5 96:21 97:4,7 98:16,20 99:7 99:17 102:2,8 102:11,11 104:13,14 106:21,24 107:4,22,23 108:3,10 109:9 109:13 125:23 126:10 130:11 130:23 132:14 136:23 137:1,1 137:2,11,12,18 137:25 140:25 141:3,4 142:3 147:4,7,10 152:10	awareness 129:19 130:6 131:12,13 b b 3:12 13:16,20 15:15 23:10,15 25:12 117:2 141:1 151:2 bachelor 9:20 back 9:15 42:16 44:9 52:6 56:16 61:16 64:13 66:1,5,21,22,24 67:11 88:16 103:9 104:20 114:9 115:17 117:1 127:13 139:12 145:21 145:24 background 9:19 22:7 23:1 backup 32:21 32:21 54:2,10 balance 35:4 75:16 76:11,18 82:15,15,16 balances 34:19 balancing 75:24 81:2,4 82:2,4,8,12,21 84:16,19 85:16 104:6 116:20 based 17:9 28:25 97:18	111:7 123:20 128:16 138:4 basically 30:8 35:9 42:10 45:17 79:23 91:22 109:21 122:23 131:11 143:25 bates 3:17,19 3:21 4:7 20:2,4 26:2 64:8 119:6,7,17,22 120:6,6,10 121:8 133:10 133:25 147:1 150:10 batteries 3:14 17:24 18:9,11 21:25 24:12,17 25:5,9 27:13 27:24 28:5 31:14 43:11,17 43:22 60:7 67:18 88:21 89:1 91:6,6,17 92:6,13,16,21 92:24,25 93:2 93:3,9,10 94:6 94:12,17,21,23 95:2,4 96:2 100:8 102:3,4 106:19 107:2 107:18 108:19 117:10,12,20 117:20,24
---	---	---	---

CONFIDENTIAL

[batteries - believe]

Page 5

118:4,9,15,22	39:1,4,7 40:6	84:21,22,24	126:11,12
122:16,19,20	41:24 42:5,19	85:4,7,9,9,13	127:22,23,23
122:21 125:17	43:1,3,4,8,14	85:15,23 86:1	128:8,9,10,21
129:4,12,19,21	43:24 44:2,3,7	86:14 87:1,2	128:23,25
130:4,6,13,14	44:16,21 46:2	88:24 89:9,12	130:24 131:13
130:15,17,22	46:18 47:7,13	89:15,15,16,19	131:14,19,20
131:6,9 132:1	47:13,17 48:4	90:23 91:12	132:6,11,12
137:8,23 140:2	48:6,14 49:3	92:19 93:5,19	135:20,22,23
140:3 141:23	49:23 50:3,5	94:1,4,14,16	136:4,23
146:3,16,21	50:16 51:2	95:14,15 96:1	137:13,19
147:14,19	54:14,19,21	96:9,13,22,25	138:5,15,24
148:3 149:9	55:17 57:7,13	97:5,12,19	142:9,10,12,19
150:2,25	57:19 58:11,13	98:9,14,17,21	142:21,23
battery 3:16,22	58:14,15,21	99:8,12,19,25	143:1,3,5,14,19
4:6 11:13,20	59:8,11,13,19	102:16,22	144:2,7,15,23
11:21,21,23	59:23 61:3,15	103:3,17,21,22	145:6,7 147:4
12:22 13:1,5	61:21 62:4,15	103:23 104:4,8	147:8 148:23
13:15 14:19,22	63:4,6,12,17,19	104:9,23 105:9	149:6,14 150:4
14:23,24 16:25	64:16 66:8,21	105:18 106:5,5	150:8,9 151:17
17:1,16,20,22	67:25 68:3,10	106:25 107:7	152:4
18:4,6,23 19:2	68:11,13,17,24	108:16,19	bed 152:25
19:15,16 22:12	69:4,6,10,12,20	109:3,11,12,19	beginning 7:13
22:23 23:11	69:24 70:4,9	109:21,22,25	16:2 37:5
24:20,24 25:20	70:14,18 71:6	110:4,4,9,12,23	begins 26:4
27:10,12,16,24	72:11,21 74:1	111:15,16	49:4 56:24
28:17,23 29:3	75:1,7,16 76:4	112:8,12,15,25	70:25
29:4,6,10,14,16	76:6,17 77:17	113:1,7 114:8	behalf 16:7,15
29:19,22 30:1	77:20 78:11,12	114:11,13,19	81:13 140:13
30:4,7 31:1,3,8	79:7,12 80:19	116:11,15,22	141:3
31:13,16 32:2	81:5,14,15,18	122:13,23	belanger 2:7
32:8 33:19,20	81:24 82:5,7,9	123:1,4,5,8,10	7:17
34:23 35:3	82:10,17,18,20	123:17,18,24	believe 9:3 20:7
36:4,9,14,21	82:23,24 83:16	124:6,17,23	23:3 25:23
37:1,19,24	83:24 84:2,4,7	125:1,2,7,10,20	56:19 57:14
38:1,11,15	84:11,13,15,17	125:24 126:2	59:25 63:16

CONFIDENTIAL

[believe - career]

Page 6

70:18 78:11 97:25 115:18 127:1 128:22 148:6 benefit 107:8 best 150:22 152:17 betke 2:8,11 8:3,3,4 20:8,11 20:17,17 22:4 22:10,14,20 23:6 24:1,2,5 25:11 26:11,13 26:18 27:5 37:4,14,16 60:12 78:4 80:11,14 83:7 83:12 88:2,6,9 90:9,18 95:7 97:23 99:5 105:1,21 108:5 114:3 115:6 118:11 119:3,7 119:18,20 120:3,5,18 124:1 125:15 125:20 126:6 126:16,19 127:3,5 128:3 128:5 130:18 132:24 133:6,8 133:13,24 134:5,9,12,18 135:1,7 139:15 139:19 141:7	141:10 143:7 144:17,24 145:16 147:16 148:25 149:12 149:17 150:12 150:14 151:1 151:13,18,24 152:5,8,18,20 better 54:18 60:8 78:8 120:1,5 125:14 138:4 beyond 72:20 105:1 141:21 bigger 58:6 119:25 bit 39:25 40:17 40:19 42:18 115:8 127:19 blood 154:14 blow 42:18 76:5 127:19 139:21 blowing 80:18 bms 22:22 board 3:23 143:14 bolded 17:7,8 boston 2:10 bottom 126:3 bought 108:1 112:14 boundaries 32:19	boundary 84:9 box 121:21 bq 30:14 bq20z70 62:22 71:5 75:23 76:25 bq20z75 62:22 bq294xx 77:2 brand 30:15 91:23 95:1,20 96:3,16,24 130:23 131:4 branded 91:17 96:9 break 40:2 48:23 56:3,14 87:25 88:2,5 88:14 113:20 113:23 126:17 126:17,20 127:11 145:11 145:19 breaking 114:1 brick 68:18,21 69:3 121:25 122:2 brightness 124:19 125:5 bring 20:2 broader 10:24 broken 113:23 brought 91:8 106:2 browed 143:21	built 32:8 94:3 bump 113:21 burn 3:15 22:1 24:14,20 business 94:8 button 24:6,7 buy 110:4 137:22 c c 2:1,6 12:6 47:6,6 50:15 50:15,23,24 154:1,1 calculate 113:3 calculation 112:21 116:6 call 68:18 121:24 129:3 called 25:3 38:20 55:6 68:22 119:5 121:19 122:16 139:8 calls 71:4 camera 6:6 24:4 capability 31:7 capacity 27:12 50:15 51:6 83:1 84:23 86:13 car 29:15 care 133:20 career 94:20
--	--	---	---

CONFIDENTIAL

[carol - chip]

Page 7

carol 1:4 6:16 155:3	causing 83:5 149:6	79:25 82:5 83:14,24,25,25	67:2 72:9,15 72:15,25 73:8
carrying 16:2	cell 3:16 27:4,8	84:3 85:17	75:18 123:10
case 1:14 6:23 9:3 12:17,24 12:25 13:2,3 19:7 27:15 34:20 35:8 50:7 54:10 60:24 102:20 111:23 112:2 117:9 118:20 155:3	27:9,10,20,20 27:24,24 28:4 29:6,7,14 31:1 33:1 34:15,17 34:19,20,21,24 34:24 35:3,6,9 35:9,15,15,18 35:22 46:2,3 51:21 57:13,16 57:17 59:18 60:1 62:10,10 66:9,9,21 68:10,11 74:1 75:12,15 76:11 76:12,18 77:14 79:20,24 80:3 80:5,6,7 81:3,5 82:2,3,8,10,11 82:14,15,16,21 82:22,23 83:2 83:18,19,20,21 85:15,16 93:17 104:5 116:20	114:11,13 celsius 46:14,15 46:19 47:14 48:13 49:9 centigrade 74:3 certain 17:25 18:7 21:7 25:10 36:13 39:4 45:20 51:7 53:6 61:14 76:2 81:24 82:1 86:19 100:1 102:19 114:20 122:15 124:9 124:11 131:20 certainly 151:8 certification 5:8 certify 154:5,12 challenge 11:17 112:21 116:5 change 69:22 112:9 155:5 changes 41:15 charge 29:17 29:22 34:8,11 39:7 46:13 47:1,6,23 48:4 48:21 49:13,15 50:11 51:14,17 53:2,16 59:12	charged 75:19 83:25 84:1,3,8 84:8 charger 50:4,5 67:8,10,13 68:8,16,22,23 68:24,25 73:5 74:20 charging 35:3 46:13,20 49:4 49:9 50:6 51:2 51:4,7,12 66:17,24 67:24 68:1 71:11 72:25 73:8 74:5 75:24 76:11,18 84:10 86:1 123:8 charles 1:5,7 6:18,20 chart 36:24 46:7 73:16,21 check 145:12 chem 56:23 58:12 79:12 149:14,14 150:15 chip 10:25 32:21 47:25 48:1,7 68:22 68:23,23,24 69:1 79:6
cases 11:10,13 11:14,20,21 12:1 13:5,12 13:14,15 91:4 91:5,8 92:15 92:17,19 142:13	cells 14:24 17:22 18:7,9 25:16 28:1 29:1 31:10,16 32:2 35:3,6,9 35:10,13 41:24 46:18 47:19 59:19 60:1,4,4 60:5 75:17,24		
catch 25:20 102:5			
categories 151:3			
categorized 138:4			
category 22:4 22:21			
caught 130:19 131:1			
cause 35:21,23 146:18			
caused 12:21 61:16 62:7 84:25 146:2,23			

CONFIDENTIAL

[chips - computers]

Page 8

chips 31:21	51:7 61:14	command	compatible
chores 115:23	81:25 82:1	111:14	128:10 135:23
chose 101:25	123:9 124:9,11	commission	completely
chris 8:3 20:17	clarify 141:11	21:22 155:25	75:6 104:23
24:1 37:14	classes 96:13	communicate	106:25
78:5 151:20	classification	29:21 39:4	completeness
christopher	10:25	47:18 102:14	134:20
2:11	clear 55:19	103:9,14	components
circuit 3:23	96:8 98:7	communicated	70:22
10:24 11:1	cleared 96:18	39:7,13 40:1,5	computer 14:5
31:18,24 32:3	clearly 125:25	40:17 59:13	14:9,16 28:24
33:16 34:5	clears 62:6	98:1 104:20	38:2,5 69:9,14
36:1,3,20 41:5	client 126:9	106:13 107:25	69:22 70:5,22
44:15,16,17	clock 39:18,22	communicates	77:18 89:17
45:15,23 55:16	39:24 40:18	31:23	96:15,19 105:7
59:4,20,21	clone 128:25	communicating	105:9,12,17,20
62:21 65:15	cloned 92:5	117:13	105:24 110:3,4
70:7,16,23,24	129:4,12,19	communication	110:20,22
71:5,10,24	130:21	40:15 43:4	111:22 112:14
73:7 74:10	code 82:13	106:19 108:3	121:20 122:22
75:23 79:7,9	112:8	108:11 139:10	124:17,19,20
84:12 143:14	coffee 56:9	139:11 140:24	124:22 125:1
circuitry 17:21	colloquy 23:25	140:25	127:15 128:9
17:25 18:7,10	color 3:22 4:6	communicati...	135:13,21
86:4	142:25	38:25 141:5	137:14,14
circuits 10:22	combination	compact 22:1	143:15 144:16
30:11,12 31:2	64:2,7	company 21:25	146:15
62:24 63:18	combines 59:20	99:10,23 107:3	computers 3:14
64:21,22 65:5	come 52:6	107:6 115:19	9:24 14:19
65:20 75:22	comes 54:12	130:3 140:13	17:24 22:1
114:14	coming 49:22	compaq 3:14	24:13,18 57:8
circumstance	50:16 68:7	compared	86:24 88:23
134:13	76:7 77:24	33:12	89:14 90:23
circumstances	111:15	comparison	91:14 94:1
25:10 49:11		34:17	106:14 107:12

CONFIDENTIAL

[computers - correct]

Page 9

108:1 112:20 117:7 122:16 137:20,22 139:7 140:1 144:14 146:4 computing 13:25 concept 100:11 concern 109:14 concerning 127:21 concerns 90:22 103:11 106:12 130:3 concludes 153:3 conclusion 124:5 condition 51:12 55:13 61:16 62:6 66:14 70:9 73:7,19 73:22 74:4 75:2 conditions 46:20 80:18 conducted 6:5 confidential 37:9,13 155:4 155:20 configuration 34:19 46:1 59:18 60:1 configurations 38:4	confirm 143:16 confusing 90:14 connect 41:21 44:11 110:7 112:20 121:19 connected 31:20,21,23 41:9 44:16,23 45:15 50:18,21 51:8 55:7,11 55:15 60:2,2,5 74:9,16 77:7 78:18 89:16 124:20 125:6 connector 37:1 37:20 121:20 connecting 68:2 connection 6:7 38:4 45:11 49:1 66:16 68:7 connections 17:3 22:24 37:23 38:9,10 39:17 65:15,18 65:20 connects 42:7 68:3 considered 123:4 consists 58:15 59:19	construct 40:15 construction 109:22 110:6 110:15,21 116:15 consumer 21:22 consumers 98:18 contact 88:24 contain 85:6 contained 82:17 107:14 134:3 contents 119:24 context 60:19 61:13 100:5 101:11 125:14 continue 6:10 48:22 continued 3:24 4:1 continues 51:15 69:16,17 84:1 continuing 151:22 continuous 46:13 continuously 10:9 control 47:22 49:22 51:1 59:20,21 67:13	67:16 81:23 139:16 controlled 47:25 controller 48:18,19 50:2 50:4 53:1,7,11 53:15 54:24 55:2,5,20 73:4 controllers 29:6 controls 40:10 84:13,14 conversation 101:3,7,12 conversations 100:4 conversion 68:21 converted 67:17 122:6 converts 69:2 convey 103:19 conveyed 72:6 118:19 cooled 14:25 coordinated 8:4 copy 15:17,19 60:21 cord 68:8 correct 9:6 11:18 13:23 14:1,17 17:17 18:1,8,12,13
--	--	---	---

CONFIDENTIAL

[correct - data]

Page 10

27:18 29:23,24 30:13,17 31:16 31:25 32:4 33:5,6 34:25 35:1 38:6,7,12 39:10,11,15 41:17,18,24,25 42:13 43:13,19 43:25 44:4,18 44:19,22 45:9 46:15,21 47:9 47:10,15 50:18 50:19 51:10 57:20 59:23,24 60:6 61:17,18 61:24 62:7 63:13,20 65:16 66:10,18,19,25 67:4,12 68:14 70:10,11,15 71:2,7,8 73:10 73:14 74:6,21 75:9,19,20 76:7,8,19 79:15 80:20 82:19 83:16 84:20 85:18 86:10 93:22 94:2 96:20 106:22 110:8 110:10,17,24 111:16 112:15 112:22 114:17 114:24 115:20 115:21 116:1	117:22 122:13 123:5,11 124:24 125:12 129:23 135:13 138:6,19 141:9 144:3 148:21 correcting 64:25 correctly 32:12 55:9 58:17 61:13 71:13 77:3 85:12 128:12 cost 113:25 coughlin 2:8 8:3 counsel 6:15 7:11 8:5,8 21:11 96:11 146:11 148:9 149:23 count 65:17 counterfeit 3:22 87:22 88:20 89:1,9 89:13,17 90:23 91:12 92:5,16 92:21,24 95:8 95:15,20 104:9 108:18 112:12 130:4,6,15,21 131:7 139:8 counterfeiting 114:2 150:24	counterfeits 91:16 96:5,6 129:10 130:9 counting 27:25 couple 148:18 course 25:19 94:5 125:19 126:15 court 1:1,24 6:22 7:2 8:6 20:14,18 22:8 22:16 23:18,18 23:20,23 24:3 108:9 155:1 cover 119:12 145:23,23 covers 121:3 create 83:15,21 144:6 created 83:16 138:17 critical 19:3 critser 12:6,24 cup 56:8 cured 61:17 curious 92:4 current 14:25 32:16 33:2,3,4 33:8,10,11,13 33:18 34:12,13 36:5,19 47:6 47:12 49:22 51:2 67:2,6,7 68:11 72:9 76:6 79:15	80:1,2 84:1,13 122:6,6 currently 9:8 15:5 custom 110:1,1 customer 89:19 109:25 customers 106:16 107:20 108:1,4,12 139:11 cut 47:12 cutting 125:22 cv 1:14 6:24 cycles 125:3 d d 3:1 4:1 5:1 daily 38:15 damage 35:21 80:7 83:21 damaged 70:22 damaging 35:17 danger 104:22 137:2 138:14 138:16 139:2 dangerous 138:24 dangers 118:21 129:2 dash 50:15 data 38:20 39:18,23 40:1 40:7,8,9,11,13 40:14,16,17,19
---	--	---	---

CONFIDENTIAL

[data - died]

Page 11

42:19 43:3,14 44:3 45:1,8 49:17 65:23 84:19 111:14 111:15,16 date 8:13 88:23 107:13 133:17 155:3 dates 147:20 david 100:19 day 153:15 154:18 155:22 dc 67:17 deceased 1:6,8 6:18,20 decided 107:7 decision 113:11 defect 11:21 defendant 1:22 2:9,13,17 3:12 8:2 15:16 defendants 1:12 defense 11:13 define 38:23 109:7 definition 10:21 17:19,21 108:22 definitions 17:7 17:9 degree 53:12 74:8 degrees 46:14 46:19 47:5,14	48:3,12 49:9 50:10 51:9,12 51:14 52:24 53:11 55:1,5 74:3 delay 22:19 deliver 55:7 department 91:24 152:12 depending 124:17,22 126:2 depends 6:6 depo 22:5 deponent 23:10 deposed 92:18 deposition 1:17 3:12 5:8,11,15 6:4,14 11:2 15:15 22:19 25:25 37:9 87:14 118:1 133:20 153:4 155:3 describe 14:6 27:2 36:2 39:19 41:2 42:23 47:2 52:3,17 61:9 64:5 68:20 71:19 91:19 described 30:16 59:7 62:12 67:3 105:7 106:3	describes 58:10 62:20 66:11 67:1 72:13,14 describing 66:7 104:23 description 3:11 4:5 10:15 18:19 58:24 59:1,22 70:6 91:20 121:15 design 16:25 18:22 57:7 63:12 86:18 88:25 designating 37:6,8 designed 34:4 66:8 70:13 75:17 79:12 81:1,2 111:21 115:10 130:24 designs 34:23 86:23 details 66:14 detect 34:7,13 36:5 48:20 53:12 54:25 85:25 86:25 108:18 detected 32:20 76:3,13 detecting 52:24 detector 38:16 detects 50:9 80:17	determine 77:1 109:11 110:22 116:10,20 118:18 142:12 146:14 device 14:1 31:22 41:23 43:8 55:10 68:2,8 70:8 76:17 77:2,10 77:12,15,18 78:20 79:1,3 79:10,17 80:3 80:3 81:18 89:25 93:20 105:10 109:10 109:12 113:16 116:9 122:7 123:3 devices 17:23 43:11,18,21 59:7 63:1 104:24 107:1 116:10,21 124:19 125:5 129:5 130:16 138:6,17 142:23 145:9 devised 138:3 138:12 diagram 39:17 121:15 122:11 143:18 died 134:3,14
---	--	--	--

CONFIDENTIAL

[differ - e]

Page 12

differ 143:2 difference 10:22 33:7 39:19 65:11 differences 66:15 different 27:16 27:23 28:17,18 28:23,25,25 29:8 30:8 33:4 34:18,23 40:4 40:9 43:11,23 45:14 47:17 48:8 55:25 63:17 67:3 89:2 97:11 125:1 132:17 132:18 differentiate 85:10 dig 42:14 digital 71:17,20 71:21,22 direct 29:17 45:10 49:1 122:6 directing 66:3 directly 45:21 45:22 47:24 49:23 53:9 74:16 director 15:6 disable 75:7 76:5 152:24	disabled 69:6 73:8 disables 80:19 disagreement 53:13 discern 116:13 116:14 discharge 29:17 32:11,15 36:4 67:2 disconnects 68:10 discourage 100:7 114:6 128:21 discover 130:2 discovered 129:2 139:2 discovery 139:5 discrimination 149:8 discuss 100:11 101:25 discussed 44:3 90:4 103:12 115:25 discussing 142:11 148:20 discussion 20:21 21:15 24:8 101:8,20 102:23 103:6 116:8 117:17 127:7 131:15	145:3 discussions 99:16,20,21,23 101:17,19 130:1 disguise 116:24 display 90:2 124:19 125:5 displayed 39:8 disposing 123:18 distance 39:22 distinction 95:13,18 96:11 distinguish 85:8 136:12 distinguished 9:12 district 1:1,2 6:22,23 8:24 division 91:10 document 15:16,21 16:1 17:6 19:24,25 21:17 26:25 27:2 28:3 36:24 42:24 56:1,18,25 58:1 60:15,25 60:25 61:14 63:10 64:11 119:22 120:17 121:2 125:25 126:12 132:16 132:17,18,21	132:25 133:1 133:14,21 136:7,12 documents 8:9 19:11,13,19 20:23 21:6 25:24 37:12 52:5 87:8 90:4 119:14 137:9 138:12 141:22 147:2 doing 60:16 89:4 97:9 99:3 103:1,11 120:12 135:6 dolan 2:6 7:17 double 54:22 download 134:4 drawback 112:10 drive 2:14 due 3:14 22:1 duly 8:15 154:8 duplicate 144:1 dynamically 82:12,14 86:5 dysfunctional 114:12 e e 1:5,7 2:1,1 3:1 4:1 5:1,1 6:18 6:20 12:4,6 26:16,23 50:15 133:22 134:15
--	--	--	--

CONFIDENTIAL

[e - exhibits]

Page 13

154:1,1 e1 79:1 80:3 earlier 105:2 early 14:7 ease 60:17 easily 122:21 123:4,5 educate 16:14 55:23 81:11 87:9,16 140:12 146:9 educates 53:21 53:22 education 9:24 educational 9:18 effect 5:14 47:8 effectively 96:18 effort 43:15 104:21 118:18 efforts 98:7,13 eight 38:8 139:22 either 11:12,17 12:10 19:25 46:19 62:16 112:12 136:15 electrical 9:21 33:8 electro 25:9 electronic 43:11,17 elicit 131:11	embodiment 11:1 employed 9:13 10:4,9 employee 9:8 employees 21:5 87:15,16 ends 143:21 energy 29:13 33:14 81:24 engineer 10:16 33:9 90:6 engineering 9:21,24 144:2 enter 25:16 entire 18:3 60:15 64:19 entirely 76:17 84:17 entitled 46:25 56:22 61:4 119:13 132:5 era 141:22 errata 155:1 error 108:20 139:8 144:12 especially 18:25 19:14 29:13 54:23 79:25 89:9 92:11 96:7 109:24 esq 2:6,6,7,11 2:15,19	essential 39:21 136:7 essentially 136:2 essentials 4:7 119:4,5,21 estate 1:5,7 6:17,20 eva 7:2 154:3 154:23 evening 9:5 event 47:13 54:3 70:8 76:12 80:16 82:9 85:22 105:18 events 66:12 eventually 63:4 68:3 everybody 77:25 78:6 133:8 134:20 evidence 146:12,13,17 149:4 exactly 53:12 55:19 101:13 139:4 examination 1:21 3:3 8:18 148:11 154:7,9 examined 8:16 exceed 35:11 46:19 62:16 123:23 124:23	exceeded 32:19 50:17,20 66:17 67:6,8 exceeds 33:25 74:2 except 5:19 108:11 136:3 exceptional 130:7,7 excuse 20:8 76:16 124:15 139:22 exemplar 142:19 exhibit 3:11 4:5 8:10,11 15:11 21:9,12,18 25:22 26:8,14 26:21 30:5 41:13 42:16 44:10 46:7,23 56:1,21 57:15 58:2 60:11 70:2 72:23 80:22 93:18,22 117:2 119:9 120:25 122:10 127:16 133:15 133:19 136:3,7 139:21 142:17 143:12 exhibits 3:8 4:3 21:11 26:9 93:16 134:25
--	--	---	--

CONFIDENTIAL

[exist - flash]

Page 14

exist 84:22	factors 124:20	100:1 103:24	133:21 134:13
existed 131:10	fail 54:6 61:20	104:1 114:20	137:4
expands 3:14	84:22	114:21 115:1	finding 103:16
expected 36:6	failed 54:4	129:20 131:8	fire 3:14 12:18
43:23	failing 54:10	131:21 136:24	12:19,20 13:1
expecting	fails 69:12	137:15,20	22:1 24:14,20
111:17	85:23	142:10 148:4	25:20 140:3
expense 113:16	failure 12:22	federal 2:10	147:3 148:21
experience	13:1,5 54:1	feedback 77:24	149:6,22 150:4
18:15,24 19:4	61:25 84:24	78:2,9	fires 13:8 22:12
86:22	fair 93:4	feel 60:23	146:1,19,23
expires 155:25	107:11 138:20	fet 47:6,6,8	147:8,11 149:9
explain 34:9,16	familiar 13:19	50:15,23,24	149:10 150:2
54:18 78:24	16:4 25:3,15	51:16 55:16	firm 7:3,22 8:1
111:10	38:15 65:19	66:16,24 67:16	first 8:15 12:13
explore 23:7	109:5 111:8,19	68:5,12 69:7	16:19 32:10
explosion 140:3	121:21 122:18	69:13 70:8	61:4,5,6,10
147:3	143:23	72:16 73:3,8	62:3,4,9,10
explosions	family 27:13	74:4	74:22,24 90:21
146:2,23 147:8	far 54:25 70:13	fets 67:13	105:10,11
extended 27:12	149:7	field 9:24 43:16	117:1 148:19
extent 40:23	faraci 2:4 7:16	47:8	fit 110:5 144:7
84:1	7:18	figure 112:13	five 11:24 88:4
external 36:20	fast 36:4	126:24	90:24 95:1,24
70:17 77:1,9	fault 75:12	figured 150:19	96:7,23 97:1
78:20 79:2	76:12	filed 6:21	104:15 106:21
81:1 120:25	favor 135:9	filing 5:7	108:15 129:25
124:19	feature 36:17	final 129:18	145:15 148:16
extra 140:22	53:25	financially 7:6	153:6
f	features 26:15	find 24:5,6	flag 71:12,15
f 5:1 50:15	29:18 30:1,4	40:23 41:15	72:5,6,19 73:1
154:1	30:13 43:23	57:23 78:15	flammable
fact 13:9	44:6 63:22	81:22 97:6	25:10
factor 114:1	64:20 75:21	99:2,10 107:2	flash 89:24
	79:14 80:2	111:4 127:20	

CONFIDENTIAL

[flashlight - given]

Page 15

flashlight 110:10	97:17 100:14 100:14 104:14 129:24	functional 104:23 106:25 114:15 116:11 116:22	30:16 31:19,21 32:18,20,22,23 33:17 35:25 42:8,17 44:14 44:21,24 45:8 45:24 47:23,25 48:1,7 50:7,9 50:10,14,18,23 53:9,22 55:8 55:11,15,16 72:2
flow 33:11,11 33:12,13,15 84:2,13	fourth 12:9 free 60:23 front 15:17,19 22:15 60:21	functionality 81:17 85:25 86:18,24 97:6 98:14 102:21 102:21 103:4 103:15 114:23	gauges 29:4 30:7 gauging 58:16 59:10,20 gears 56:4 general 18:19 generalize 43:6 generally 14:6 33:8 37:22 57:4 59:23 99:23 128:20
focus 18:25 folder 21:12 134:24	fuel 28:12,16 28:22 29:9,12 29:12,15,16,20 30:7,16 31:19 31:21 32:17,20 32:22,23 33:17 35:25 42:8,17 44:14,21,24 45:8,24 47:23 47:25 48:1,7 50:7,9,10,14,18 50:23 53:9,21 55:8,11,15,16 58:16 59:20 72:1	functionally 145:7 functioned 145:8 functioning 75:2 functions 17:25 30:16 31:2 32:6,9 54:22 63:22 104:10 105:19 further 5:18 71:19 101:19 101:22 145:13 152:19 154:12 fuse 76:5 80:1 80:19	generation 143:3 genuine 114:8 getting 78:2,8 107:21 125:21 131:17 give 33:10 84:10 101:14 108:8 126:21 145:15 given 90:1 107:20 153:4 154:10
follow 22:20 following 32:9 follows 8:17 42:6,7 force 5:13 foreseeable 123:22 124:9 forever 83:11 form 5:19 43:3 83:8 106:15 107:16 108:2,5 109:21 110:14 110:20 114:3 124:1 141:7 142:25 144:24 formal 58:23 former 87:15 forth 154:8 forward 13:15 23:5 found 97:19 130:5,10 132:12 146:22 four 11:23 13:15 87:20,21 88:18 89:7 92:18,20,23	fully 69:23 83:25 84:3 function 16:25 18:11,23 22:22 29:16 31:12,17 35:24 36:16 38:6 65:21 66:10 68:25 69:14,22 75:7 82:16 84:17 99:3 104:6,11 113:15 144:8 144:20	g g 2:11 12:4 gain 21:5 gained 102:15 102:19 131:22 gauge 28:12,16 28:22 29:9,12 29:13,15,17,20	

CONFIDENTIAL

[gives - houston]

Page 16

gives 108:24	119:8,8,11	h	helpful 90:19
glitch 115:8	120:13,24	h 100:21	helping 96:12
go 6:11 23:22	127:14 134:19	ha 118:13	helps 90:18
28:11 30:5	139:15 142:15	hand 65:14	119:25
42:15 44:9	143:11 145:14	154:18	hereinbefore
46:22 52:10	145:18,24	hang 8:23	154:8
55:25 63:5	149:12 151:1	22:14,14 97:23	hereunto
64:13 66:1,6	151:22	134:9,18	154:17
67:11 73:15	good 6:1 8:25	hanging 90:10	hey 22:4 37:4
83:8 110:3	59:16 88:7	happen 129:22	high 14:25
111:1 114:9	121:24 135:4	happened	35:20,21 54:25
115:17 117:1	148:13	97:15	65:24
119:23 120:18	gopel 12:2	happening	higher 35:16
120:21 124:2	grab 56:8	72:21	36:6 48:3
135:7 141:8	graduate 9:23	happens 67:8	highlighting
152:25	10:2	73:12 74:25	60:13
goal 103:1	graduated 9:21	happy 134:5	hindrance
116:24	10:5	hazard 24:11	113:22
goes 26:5 42:8	granted 15:3	24:16,21	history 89:8
44:17 53:8	great 24:1 58:8	hazards 3:15	hold 13:23 90:9
61:24 68:24	88:8 120:23	22:2 24:14	150:10
84:15 106:17	127:3,4 133:22	99:24 132:11	hollowell 1:6,6
going 6:2 15:8	134:8 145:16	he'll 23:14	1:8 2:24 6:18
15:25 16:18	group 35:10	heading 127:24	6:19,20 7:20
19:17 23:21	91:15,17,20,22	135:10,12	homemade
29:8 33:18	92:2,3 100:24	heard 6:8 21:23	128:21
37:6 40:25	107:7,9	heat 14:16 83:6	honest 56:6
46:22 48:8	guess 80:14	83:15,17	150:14
53:12 55:15	117:25 124:21	heating 25:17	hoping 139:15
56:5,12 66:5	guide 3:20	held 1:23 20:21	host 45:5,6
68:17 83:7,12	119:13	21:15 24:8	hours 125:4
85:13,20 88:1	guys 95:11	127:7	housed 51:4
88:13 89:21		help 19:20	100:23
98:16 108:13		52:14 74:18	houston 101:1
110:5,5 111:6		95:18 109:7	

CONFIDENTIAL

[hp - imbedded]

Page 17

hp 1:11,21 2:9 2:13 3:12,14 3:14 6:21 8:2 9:8,11,13 10:5 10:10 11:12 13:16,20 15:6 15:16 16:7,15 17:11 18:15,19 18:24 19:6,14 21:5,25 26:4 27:3,14 31:2 37:8 42:25 46:6,22 57:6 57:18 59:3 63:7,11,12 64:21 70:4 74:1 76:9 78:13 81:13,15 82:17 84:4 86:17,24 87:15 89:14,20 90:3 90:22,23 91:11 91:13,16,23 92:4,4,7,10 93:4,6,11,13,18 93:20,20 94:1 94:4,12,16,17 94:22 95:1,3,4 95:20 96:2,10 96:12,16,18,24 97:4,11 98:9 98:16,21 99:3 100:22,24 101:18 103:2,4 103:10 104:4	104:11,13,21 104:22,24,25 105:10,12,17 106:5,6,13,19 107:2,23 108:17 109:10 109:20 110:13 110:13 111:22 111:25 112:24 113:6,18,25 114:8,11 115:2 117:6,7,11,19 117:20,23,24 118:3,3,8 123:2,22 124:14,16 125:16,23 126:10 128:10 128:11 130:22 131:4,5,8 132:9,12 135:22,23,24 136:22 137:5 137:12,13,14 137:20,21,22 138:24 139:1 140:1,16 141:3 141:23,24 142:20 144:13 145:7 146:1,3 146:15 147:4 148:23 149:5,9 149:10 150:23 151:16 152:2 155:3	hp's 8:4 87:22 88:20 94:3 96:3 hp.com 141:12 hp00053 3:21 119:12 hp00108 120:25 121:9 hp00109 121:13 hp00110 127:15 128:4 hp00116 123:15 hp00181 3:21 hp00182 4:7 hp00210 135:8 hp00233 4:7 hp01297 3:19 56:24 hp01305 60:10 66:5 hp01334 3:19 hp01366 3:17 hp01367 36:24 hp01377 3:17 hps 95:22 hstnn 58:12 hundred 87:6 hung 125:21 hurt 88:3 hypothetical 48:9 49:7	i ic 31:21 50:6 51:2,4 68:23 68:25 72:2 76:21 84:10 idea 132:7 151:11 ideas 103:12 identical 142:24 144:6 identification 8:12 111:7 133:16 identified 46:9 identify 19:24 47:2 106:6 115:4 ignition 36:19 imagine 116:12 imbalance 34:15,17 75:12 76:2,12 79:21 79:23 83:18,19 84:21 85:8 imbalanced 35:14 83:14 imbalancing 82:22 83:2 imbedded 48:18,18 50:2 50:4 53:1,7,11 53:15 54:24 55:2,5,19 114:10 122:17 122:20
--	--	---	--

CONFIDENTIAL

[impact - integration]

Page 18

impact 74:19	108:19 117:11	39:6,12,25	instruction
implement	incorporated	40:5 42:1	107:17 119:1
76:14	144:13	44:25 45:22,23	instructions
implemented	independent	47:18 48:3,11	26:22 117:6
111:25 112:4	34:19 50:24,25	48:12 49:2	123:7 139:25
importance	82:7	50:3 51:13	140:5,11,16,17
75:15	independently	54:3 59:12	instrument
important 35:2	49:18 53:2	72:5 74:13	63:18
35:5 53:25	77:13 86:14	86:9,13 92:3	instruments
114:20 131:21	87:2	102:23 103:15	10:8,10,13,18
148:4	index 20:2	104:21 106:11	30:15 62:22,24
impossible	indicate 29:21	107:14 114:18	64:23,25 71:5
116:19 143:7	63:11 144:22	118:19 129:5	79:6
improperly	indicated 25:24	131:25 137:5	insurance
117:18	34:22 56:19	138:18	11:14
improvement	92:17 126:11	initial 10:12	integrate
14:23	indicates 31:6	46:13 49:3,8	110:16
incident 88:23	32:5 36:11	51:12	integrated
108:17,23,24	41:8 58:9	initially 66:15	10:22,24 11:1
incidents 102:2	62:19 74:2	123:24	30:10,12 31:1
146:5,15	121:19 126:1	initiate 49:12	31:18,23 32:3
147:11,13,21	indicating	initiating 49:15	33:16 34:5
148:2 149:5	124:21	input 76:21,25	42:8 44:15,17
include 29:7	indication	81:23	45:15,23 50:1
104:5 114:15	41:13 66:23	inquire 98:25	55:16 62:20,23
included 24:17	140:16	99:9,14	63:18,25 64:21
58:12 94:12	individual	inserted 54:14	64:22 65:4,14
114:14,23	34:20 35:6,6,8	inside 44:21	65:20 71:5,10
115:5 132:4,22	individually	68:9,10 103:16	71:24 72:1
includes 120:9	1:4 6:16	installed 69:24	73:6 74:9
120:11 136:3	industry 43:7	105:19 106:6	75:22 79:6,9
including 7:11	inform 55:16	110:23	84:12 109:25
17:2,23 22:22	information	instance 83:6	114:14
22:23 82:23	21:5 32:1 34:4	instances 33:18	integration
88:24 93:5	37:7,21 39:5,5		19:2

CONFIDENTIAL

[intellectual - knowledge]

Page 19

intellectual 11:16	90:16,22 91:2 91:5,11 92:16	jersey 1:25	52:15 54:7,13
intended 128:15	93:1 112:2 149:18	jessica 1:6 2:24 6:18 7:20	55:4,20,21 61:6 64:4,7
intention 110:25	involvement 91:7	jls 1:14 6:24	65:23 72:22 77:23 78:21
interested 7:7 92:11 154:15	involves 62:10 121:18	job 1:15 10:12 10:14,16 18:19 18:25	87:5 90:15 92:1 94:10
interface 38:20 38:24,25 39:18 39:18,22,24 40:8 45:2	involving 147:14	joke 139:17,17	99:5,21 100:20 101:18,21,21 101:23 106:18
interfaces 17:22	ion 24:12,17,20 25:4,9,16 43:10,17 58:13 140:3 146:3,21	jurisdiction 12:14	107:19,19 115:2 130:6 136:11 138:22
internal 72:1 90:3 122:19,20 123:1	ip 11:12,13,16	jurisdictions 13:12	139:9,10 140:14 141:25 143:9 144:15
internet 6:7	issue 23:1 27:15 111:22 115:9 117:9 118:20	k	146:19 147:20 148:19 149:11 149:25 150:1,3 151:6,12,12,15 151:16,19,25 152:1,2,11,11 152:15
interpret 124:25	issued 117:6	kaflinski 7:2 154:3,23	knowledge 16:14 18:16 23:8 25:13 87:22 88:20 91:25 102:15 102:20 104:17 106:11 113:13 115:15 116:19 128:15 131:18 131:22 132:3,8 140:9 149:5 150:22
interrupted 47:7	issues 11:13 96:22 128:7,14 135:19 137:24 150:24	keep 30:1 88:1 114:13	
introduced 89:10	item 34:15 35:24 46:24 128:19	kendrick 2:12	
investigating 91:12 98:8	items 17:7,9	key 112:21 114:7,10,15 116:6	
investigation 142:8 148:1	j	keys 112:25 113:3	
investigations 146:4	jackie 134:21	kind 40:15 43:9 84:18 121:22 128:24 130:12 130:14 131:12 151:6 152:21	
invoke 98:2	jaclyn 2:15	knew 102:7 118:8 125:16 131:10	
involve 11:17 14:18 92:20,23	jacquelyn 7:25	know 12:15 15:3 21:19 23:24 24:23 48:15,16,22	
involved 14:22 19:7 24:24	january 108:24		
	jaoyuam 8:24		

CONFIDENTIAL

[known - little]

Page 20

known 108:16 115:19,19 117:2 129:6 knows 23:13 90:11,14 115:14 151:9	106:13 107:11 109:11,20 110:5 111:14 111:22 112:2 112:14 113:1 115:3,9 117:7 117:8 118:24 119:1,4 123:22 124:7,24 140:1 143:15,17 144:7,14 146:4 146:15 147:4,6	led 148:2 lee 1:21 3:4 6:14 8:14,21 23:6 25:12 27:5 60:12 88:7 90:10 97:23 120:5 132:24 133:6 135:2 139:17 144:25 149:13 150:22 151:4,8 153:4,11 155:4 155:20 lee's 126:24 left 29:22 39:7 65:14 legal 91:8,24 92:8,16 102:20 length 137:13 level 61:5,7,10 61:19 62:4 65:24 74:22,25 75:5,10 76:1,2 76:21 78:10 79:11 lg 19:15 20:3 56:23 57:6,18 57:18 58:12 63:3,6 66:8 70:3 78:16,19 79:12 93:21,24 149:14,14,23 150:15 life 123:22,23 124:7,17,23	125:1 light 25:9 likely 123:23 limit 72:25 126:23 149:13 limited 130:9 149:21 150:7 line 31:4 40:14 126:4 143:4 155:5 ling 8:23 link 134:14 links 134:3 list 46:25 listed 16:3 24:11 33:2 34:15 36:16 41:1 117:2 121:14 127:24 listen 24:5 literature 107:13 132:22 lithium 24:12 24:17,20 25:4 25:9,16 43:10 43:17 58:13 140:3 146:3,21 litigation 17:13 97:25 98:10,15 99:4,13,24 100:5 102:17 102:18 108:25 little 42:18 58:5 114:25 115:8 122:25 127:19
I			
I 5:1,1 12:4 lack 100:1 102:21 103:15 131:7 137:15 138:5 142:22 148:3 lacked 103:3 104:9 106:14 114:20 131:20 136:24 142:10 lacking 104:24 105:19 107:1 138:17 lange 2:4 7:16 7:18 language 146:18 laptop 12:18,19 17:2,11 19:6 22:23 24:18 27:15 28:24 29:21 31:4 36:10 38:2 51:24,25 57:8 68:2 76:9 81:2 82:17 86:23 88:22 104:25 105:12,17,17	laptops 69:19 94:13 96:2 104:11,22 112:1 118:20 132:10,23 136:9 137:6 139:1 141:24 142:20 147:7 lastly 29:18 late 9:15 43:2 law 7:22 8:1 13:17 lawyers 99:22 lb0x 58:12 lead 24:20 35:22 80:5 82:22 leading 85:2 learn 148:2 learned 107:15 138:14 leave 106:8		

CONFIDENTIAL

[lives - mastriano]

Page 21

lives 38:15 llp 2:4,8,16 located 77:16 100:25 log 26:20 long 9:13 84:8 96:6 longer 96:6 123:10 126:22 longevity 125:2 125:9 look 19:17 26:9 41:3 52:3,5,12 52:18,21 53:3 53:4 54:24 56:18 60:14,18 60:24 61:2 65:13,22 77:6 78:14,25 81:16 82:11,14,15 87:8 91:23 119:17 125:13 142:24 looked 19:22 57:15,24 81:14 93:16,22 113:6 115:2 118:23 132:5 137:8 138:12 142:22 145:8 looking 27:9 41:10,13 66:2 123:12 133:9 looks 49:17 78:18 91:16	120:16,17 143:23 145:7 loss 144:21 lot 78:2 low 67:9 lower 52:24 m m 12:5 ma'am 24:6 machine 105:23 made 37:14 43:1 62:21,24 93:7 94:6 95:14,15 110:1 mail 133:22 134:15 mails 26:16,23 majority 9:2 make 19:6 36:3 58:5 118:18 119:25 142:3 145:5,6 making 109:19 110:12 malfunctioning 30:2 146:16 management 14:1,3,5,8,9,12 14:13,15 17:1 17:17,20 18:23 19:1,1 58:14 58:15,21 63:19 64:16 71:6 72:11,21 75:17	76:17 77:17 78:12 81:19 82:8,18 85:23 86:14 87:2 89:15 124:18 managing 85:16 manner 118:12 manual 119:1 121:14 123:8 124:15,16 127:15,21,24 129:6,22 131:5 136:22 140:20 manuals 117:5 manufactural 140:17 manufacture 93:5,14 112:1 118:9 140:10 140:15 manufactured 93:10 94:21 105:4,12,15 107:12 115:10 117:12,19,23 118:3 123:25 149:24 manufacturer 27:25 139:24 142:12 144:1,5 manufacturers 30:9 43:8,9,21 43:21 92:9 93:25	marcellin 1:4 6:16 155:3 margin 53:11 maria 2:19 7:21 134:21 148:14 mark 133:19 134:24 marked 8:9 15:11 21:8,18 25:21 37:12 56:1,21 95:22 119:9 127:16 133:14 134:25 136:7 142:17 143:12 market 88:21 91:13 92:5 102:3 111:2 128:25 136:25 marriage 154:14 massachusetts 2:10 mastriano 2:19 3:5 7:21,21 106:15 107:16 108:2 114:4 121:7,10 124:4 145:1 148:12 148:14 149:16 149:20 150:13 151:10,20 152:7,16
---	--	--	---

CONFIDENTIAL

[match - motherboard]

Page 22

match 38:4 143:24	68:20 77:8 86:12 110:12	messaging 108:20	monitor 48:22 75:23 76:11,18
matches 113:4	110:19 141:4	messed 118:13	81:3 82:8 83:1
material 106:17	meant 37:4 94:10	method 117:13 140:4	83:4 85:14
materials 105:22 106:1	measure 29:13 33:17	microphone 152:25	monitored 32:17 35:11
matter 6:16 11:9 17:12	measured 35:7 77:13 125:3	microprocessor 10:25 62:21	monitoring 53:16
154:15	measurement 34:20 143:9	microprocess... 10:20,23 30:10	monitors 85:13
matthew 2:7 7:17	measures 41:23	30:13	morning 8:25 9:5 148:13
maxim 30:18	measuring 53:16 77:13	middle 36:25	151:7
maximum 79:24 85:6,6	mechanical 109:24 110:2	miller 2:16 7:22	motherboard 17:3 22:24
85:13	mechanism 35:22 115:3	mind 41:16 56:2	37:24,25 38:5
mckay 1:6 2:24 6:19 7:20	mechanisms 25:19 109:13	minus 38:14	38:11 39:1,3,8
mean 29:11 32:24 33:24	media 6:13 153:5	minute 56:3 88:4	39:14 40:6,12
71:16 79:5	mentioned 1:23 12:13 33:3	minutes 87:24 106:2 145:15	42:2,9 43:5
82:1 93:10	42:15,19	148:16	45:1,8,12,21
106:16 108:23	128:20,24	missing 115:1	47:19,24 48:10
109:7 111:10	message 89:9 89:13,18,23,24	misspoke 64:24	48:13,19 49:2
112:7 130:25	90:1,4 105:7	misstated 67:22	49:10,12,14,21
131:1 133:3	105:15,16	misstatement 118:2	50:1,2,21,22,25
144:18,19	106:4 107:8,17	model 19:6	51:1,5,6,9,15
meaning 29:12 35:16 105:7	108:11 139:8	models 144:13	53:23 59:13
meanings 125:2	140:20 144:12	moment 15:9 56:11 80:21	68:15,22 69:1
means 25:7 32:25 34:9,16	144:20 145:4	139:5	69:9,14 71:18
41:2,4 47:3,6			71:24 72:6,18
61:10,12 62:4			74:16 76:10,15
			76:16 81:3,17
			81:23 82:6,11
			82:13,13,25
			84:9,12,18,23
			85:4,5,7,12,25
			86:5,6,10,15,18

CONFIDENTIAL

[motherboard - occur]

Page 23

86:25 110:7,16 111:17 112:8 115:3 116:19 motherboard's 74:20 move 23:4 25:21 40:25 80:22 87:19 88:17 108:13 mu06055 28:9 81:14 mu09093 3:16 27:9 multi 35:3 multiple 29:3 40:9 83:24 103:7,8,24 mute 77:25 78:4	nation 9:4 national 8:4 nature 138:3 necessarily 36:20 79:23 124:5,6 140:9 need 24:4 41:18 52:5 60:14 90:4 122:25 134:16 145:23 needed 127:23 needs 93:23 negative 34:11 38:10 never 131:14 new 1:2,25,25 2:5,14,18 6:23 8:16 9:5 56:18 139:2,7 144:12 154:4 newly 105:11 nine 46:24 47:4 51:21 nodding 152:7 nomenclature 95:8 125:22 130:20 131:2 non 96:24 106:5 117:11 117:24 118:3,3 118:15 143:25 nonexistent 130:8 noon 127:2	normally 36:18 north 2:18 8:23 notary 1:24 8:15 153:20 154:4 155:24 note 6:4 notebook 3:14 3:20 4:7 17:22 17:24 18:2 19:2,23 20:12 22:1 24:13 27:4 37:24 39:1 119:4,13 119:20 notice 3:12 15:15 22:5,15 117:2 noticing 7:14 notification 107:20 138:1 notifications 140:22 notifies 89:18 notify 137:21 138:25 number 6:13 6:23 13:22 19:20,25 20:1 20:5 21:1 26:2 29:1 30:6 38:19 41:1,20 42:2 44:12 45:1,10 46:8 46:24 47:4 65:17 80:23,25	87:7,10,16,19 87:21 88:18 89:7 92:18,23 108:14 121:8 121:19 130:12 138:15 139:22 153:5 numbered 28:8 numbers 20:3 65:8
n			o
n 2:1 3:1 4:1 5:1 12:5 name 6:25 8:20 8:21 9:1 12:7 13:23 58:23 91:19,21,22 100:18,19 101:2,5,14 121:23,25 122:3 143:23 152:14 155:3,4 names 11:25 13:5 naming 65:10 65:11			o 5:1 12:4 38:20 100:21 oath 5:13 7:5 object 22:18 23:2,14 83:7 149:12 151:1 objected 108:6 objection 23:4 23:9,17 25:11 108:5 114:3 124:1 141:7 144:17,24 151:13,14,18 151:23 152:6 objections 5:19 7:8 observing 7:19 obtain 15:1 obviously 14:15 27:8 142:7 occur 61:23 66:12,17 91:1

CONFIDENTIAL

[occurrence - pack]

Page 24

occurrence 36:18 occurring 83:5 99:12 occurs 33:15 36:8 72:11 73:1,19 offered 26:15 officer 5:12,15 15:5 oh 53:5 92:25 117:23 okay 11:15 20:6,18 23:6 24:3,6,22 27:11 30:24 37:18 40:22 41:19 44:8 52:14 57:22 58:8,25 59:16 60:23 62:8 63:15 64:10 65:12,25 67:15 69:25 88:9,11 90:17 93:12 95:21 107:10 109:1,15 115:16 118:7 121:5,6,12 122:9 125:8 126:3 128:5 129:1 131:16 132:19 133:6 136:1,14 141:19 143:6	143:10 151:10 151:24 old 110:4 once 61:16 62:6 68:12 134:23 138:22 ones 30:14 70:12 87:9 93:6 95:1 113:8 115:24 130:22 open 41:1,8,12 143:22 operate 69:9 operates 80:17 operating 31:14 62:14 66:22 67:7,11 103:4 144:23 operation 36:12 61:3 114:2 operator 105:8 105:15 opinion 114:5 opportunity 55:22 72:19 opposed 118:3 option 27:4,13 27:20,20 options 27:16 27:23 62:3 order 16:15 37:10 38:1 52:6 81:12	93:18 organic 25:9 original 17:1 22:22 54:11 93:6 107:9 oscilloscope 112:13 ot 73:3 outcome 7:7 43:15 80:18 154:15 outline 111:5 145:12 output 36:4,5 68:23 70:20 outputs 69:2 outside 81:18 99:3,23 100:4 overcharge 32:11,15,16,24 32:25 59:3 79:14 146:24 overcharged 35:16 84:3 overcharging 81:4 82:4,10 82:22 83:2,5 85:22 146:2,18 146:19,21 148:20 149:1,6 149:7,8 overheat 24:13 overheating 35:19,23 55:10 55:14 59:4	79:14 80:6 82:23,24 84:25 85:24 86:25 116:21 150:5,6 151:17 152:4 own 17:25 54:12 owner's 123:8 140:20 owners 106:13 p p 2:1,1 5:1 12:4 100:21,21 p.c. 2:12 p.m. 6:2 56:12 56:15 88:12,16 127:9,12 145:17,20 153:3 p1-6030025 1:15 155:2 pack 4:6 14:19 14:22,23 17:2 18:4,6 22:23 27:4,25 29:6 29:10,19 30:4 30:8 31:1,8,13 32:8 33:19,21 34:23 35:3 36:10,14,21 37:24 38:2 39:2,4 40:6 42:7 43:4 44:7 44:22 47:7,17 48:6,14 49:3
---	--	---	---

CONFIDENTIAL

[pack - party]

Page 25

49:23 50:3,5 50:17 51:3 54:13,21 57:7 57:13 58:11 59:8,11,19,23 61:3,15,21 62:5 63:4,6,12 63:17 64:18,19 66:8,22 68:3 68:11,13,17 69:4,6,10,12,20 69:24 70:9,14 70:18 72:24 74:1 75:1,7 76:4,6 77:20 79:7,13 80:19 81:24 82:9,18 82:20,24,24 84:2,4,7,13,15 84:18,22,24 85:5,7,9,9,14 85:15 86:2 87:1 89:15,16 93:19 94:1 96:22 104:4 105:9,19 109:12,12,19 109:21,23 110:12,23 111:15,16 112:13,15,25 114:11,13 116:11,16,22 122:13 123:1 142:19 143:1,4	143:14 144:2 149:15 150:9 150:15 package 14:24 18:3 packaged 17:24 packs 23:11 28:17,23 29:4 31:3 43:24 44:3,16 46:2 57:19 62:15 67:25 70:4 78:12 83:24 90:23 91:12 93:5 94:14 95:14,15 96:1 96:9,13,25 97:5,12,20 98:9,14,17,22 99:8,12,19 100:1 102:16 102:22 103:3 103:17,21,22 103:23 104:8,9 104:24 107:1 113:1,7 114:8 114:19 131:13 131:14,19,20 136:23 137:13 137:19 138:5 138:15,24 142:9,10,12,22 142:24 143:5 143:19	page 3:3,11,24 4:5 15:16 16:1 16:2,3 36:23 36:25 42:16 43:22 44:9 46:6,22 58:2,4 60:10,19 64:8 64:14 66:1,5 70:2,25 73:15 119:12 120:13 120:15,24 121:14 122:10 123:13,14 127:15,25 128:3 132:13 135:8,10,16,18 155:5 pages 3:13,15 3:17,19,21 4:8 pair 34:21 62:25 63:1,23 79:24 pairs 60:6 panel 54:12 part 18:18 19:3 22:6,13 59:11 63:18 71:5 75:22 78:11 90:15 91:24 99:5 107:8 114:9 119:21 participants 6:7 participating 7:19	particular 14:21 15:1 17:23 24:16 30:7 31:1,3 38:2 39:17 42:24 51:23 57:7,12,19 58:1,21 60:13 62:20 63:3,12 63:17 66:13 71:10 74:9 75:23 77:15 78:21 81:12 82:4,10 85:15 86:8 91:3 93:19 94:1 101:25 102:20 107:25 109:11 109:20 112:2 119:1 146:10 147:9 particularly 19:5 46:24 123:16 parties 5:5 6:11 93:8 95:15,16 154:13 parts 81:17 party 7:5 88:24 91:6 92:13,25 93:1,3,9 94:21 95:9 96:9 100:8 103:17 147:19 150:24
---	--	---	--

CONFIDENTIAL

[pass - posing]

Page 26

pass 145:12 past 50:12 95:11 pastor 2:23 6:25 patent 14:22 15:2 patents 11:17 11:18 13:22,25 14:5,8,10,18 pavilion 17:11 19:6 27:14 28:18,24 57:7 63:7,13 69:19 70:5 76:9 82:17 88:22 93:6 94:1,13 96:2,14 97:12 98:10 104:11 104:25 105:17 109:10,20 110:13,13 111:22 112:14 117:7 123:2 132:9 136:9 137:6,14,20 139:1 140:1 141:23 142:20 144:7 146:3,15 147:4 pavilions 78:13 pc 3:20 119:13 people 99:17 100:13,16 107:7 125:16	125:24 126:1 126:10 130:3 138:25 percent 87:6 perfectly 55:19 performance 19:1 performed 84:17 performs 32:21 66:9 perimeter 66:17 perimeters 66:11,23 67:2 period 18:20 73:1 96:7 110:2 137:6 permanent 61:24 permanently 80:19 persisted 140:21 141:15 person 90:7 100:18 personal 16:14 19:4 23:7 25:13 140:9 pfin 76:25 phenomena 25:15 photograph 3:22 4:6 143:14	phrase 32:24 33:22 58:19,20 109:5 111:8 phrased 117:18 phraseology 60:8 124:15 pick 120:13 pictorial 121:15 122:11 piece 40:19 109:24 pieces 40:5 79:25 pillinger 2:16 7:22 pin 38:19,20 40:1,7,10 41:1 41:14,18,20 42:2 44:12 45:1,10 48:10 48:22,25 54:12 54:13,23,25 78:18 86:8,20 109:22 110:6 110:15,21 143:17,18,22 143:22 144:1 pinout 37:1,20 pins 34:12 38:3 pipho 100:19 100:22 101:15 101:18,20,25 102:14,24 103:7,9,14 104:18,20	106:12 place 1:24 6:11 placed 31:10 placement 144:1 plaintiff 1:23 6:15 7:20 plaintiff's 3:10 4:4 8:10,11 15:15 133:15 plaintiffs 1:9 2:4 9:3 plaintiff's 3:12 please 6:4 7:9 8:7 26:3 28:21 56:11 67:20 100:20 138:8 139:13 plug 69:21 plugging 67:25 plus 38:14 point 41:6,14 57:23 63:11 94:19 129:18 133:19 139:5 pointed 143:17 143:20 pop 105:2,6,10 105:22,24 106:2,14 108:11 144:18 145:4 portion 73:6 posing 24:13
--	--	--	--

CONFIDENTIAL

[position - protection]

Page 27

position 9:10 87:12 126:9	pre 8:9	prior 10:1 11:3	104:2
positive 38:10	precedes 60:19	15:21 26:25	processed
possess 35:25	preparation	56:19 88:23	94:16
possible 53:10	19:8 25:25	105:14,15,16	produced
54:5 66:14	56:20 57:1	107:12 108:1	14:16 133:24
103:13 107:24	99:1 130:1	108:17 130:4	139:23 141:2
115:23 124:12	prepare 19:20	139:9 140:5	product 10:16
136:15 145:5,6	20:25 89:6	142:8 144:12	21:22 37:8
post 9:23	90:13	149:4,5	131:11
139:24 140:10	prepared 16:7	priority 155:1	production
140:15,17	20:25 81:8	privilege 97:21	134:2
posted 141:24	98:5 146:7	97:22 98:3	products 10:17
potential 23:12	preparing	privileged	92:9,10 98:19
24:16 33:14	87:14 118:1	142:7	profitability
55:14 62:13	119:15	probably 40:23	114:2
84:2 99:24	present 2:22	52:8 53:7	programmed
105:8 128:7,14	7:11 9:11	67:22 88:3	48:2,13 73:18
132:10 135:19	40:20	97:10 103:8	89:14
potentially	prevalence	117:18 138:20	programming
54:1 80:8	96:24 104:16	problem 83:20	116:9
96:14 137:22	prevent 36:19	102:8,11	programs
power 14:2,5,8	84:5 103:2	106:21,25	124:18
14:12 19:1	118:4	107:4,14,22,22	pronounce
43:12 48:4,14	preventing	107:23,25	30:20
50:16 67:17,17	60:15	115:18,23,24	property 11:16
68:1,7,8,9,13	previous	130:12 131:13	proposal 57:18
68:15,16 69:8	106:16 137:21	137:12	protect 70:14
69:13,21 76:12	139:8 143:3	problems 92:13	protected
82:9 84:24	previously	134:2	97:21
87:1 121:1,20	75:16 85:20	proceed 8:8	protection 32:9
122:5 124:17	105:4 109:23	proceeding 7:9	36:1,3 46:25
127:23 128:22	119:9 122:1	process 40:21	58:16,19 59:3
powered 14:1	132:5 142:16	49:15 75:22	59:4,4,5,8,21
	principal 55:12	93:23 94:14	61:5,7,11,12,19
		98:8,16 99:24	61:20 62:4

CONFIDENTIAL

[protection - really]

Page 28

70:7,13,17,17 70:18,19,21 71:1,7 73:6 74:23,25 75:6 75:11 76:2,21 77:2,9 78:10 79:10,11,13,16 79:17 80:2,17 104:1 protective 37:10 protocol 52:2 52:13,15,19 provide 16:15 18:15 20:9 29:14,18,25 30:15 31:2 34:4 36:17 37:21 43:16 51:2 54:3,10 74:12 87:17 104:21 108:22 112:19 provided 17:6 26:16,21,23 31:17,18 33:17 45:21,22 57:17 63:22 66:8 68:16 75:6 79:13 86:9,25 87:9 128:8,9 128:17 132:9 132:22,23 135:20,22 136:9,11,16	137:5 139:25 140:5,11,16 provides 17:25 18:10 28:4 29:20 30:3 32:1 36:13,14 49:1,2 59:2,23 66:14,20 73:17 73:21 pse 55:6 public 1:24 8:16 153:20 154:4 155:24 pull 120:8 purchase 136:10 purchased 107:12 128:10 135:24 138:25 purchasers 104:22 117:6 117:14 118:19 132:9 136:9 137:5,21 139:9 140:6 purchasing 94:8 purely 99:4 purpose 41:14 79:8 purposes 98:10 98:18 99:13 pursuant 16:12 put 13:15 21:25 34:18 80:23	101:11 115:6 115:13 119:11 124:16 134:24 136:21 145:24 putting 60:16 q quality 6:5,6 100:24,24 query 112:7 question 23:15 24:10,15,19 28:20 41:7 49:19,21 52:4 52:6,23 55:23 63:5 67:20 73:20 83:8 85:19 86:7 97:3,24 98:4 99:9 100:6,11 105:5 106:10 117:25 118:13 118:17 123:3 125:23 126:14 132:2 136:19 137:16 138:8 138:21 140:23 142:8,21 144:11 149:7 questioning 16:19 questions 9:2 16:8 19:8,21 21:1 40:25 81:13 87:10 89:6 120:19	145:13 148:7 148:10,17 151:21 152:17 152:18 quick 88:2 126:17 quite 152:9 r r 2:1 5:1 12:5,6 12:6 154:1 raised 103:11 106:12 range 44:25 46:9,12 62:14 62:16 67:7,11 rate 75:18 rated 35:11,17 ratnum 12:2 reaches 72:24 read 32:12 45:4 45:7 48:21 58:17 71:13,18 71:25 77:3 88:19 111:14 118:11,12 128:12 136:3 reads 80:25 87:21 145:25 ready 40:20 real 55:9 realized 73:23 74:4 really 107:24 128:25 129:24 131:12 137:2,2
---	---	---	---

CONFIDENTIAL

[realtime - removable]

Page 29

realtime 84:19	134:12 139:17	referring 52:5	registers 44:24
reason 69:13	139:19 145:18	52:16,18 57:1	51:13 73:7
113:18 126:2	145:21 153:2	121:3 122:2	regular 18:24
155:5	154:9	135:17 141:16	reinstall 122:13
reasonably	recorded 6:9	refers 25:4	reiterate 44:13
124:8	6:14	28:12 38:19	related 7:5
reasoning 65:9	recording 6:6	47:22 61:6	11:23 14:2
recall 3:14	6:10	62:25 63:2	18:16 19:8,20
11:10,25 12:14	recoverable	65:2 77:5	97:25 148:20
12:16 13:11	61:10,12	78:22 109:6	150:9,24
21:25 28:7	recovers 66:21	reflect 139:19	154:12
101:2	66:22 67:10	refurbishing	relay 50:3
recalls 21:24	reduce 128:7	114:8	relaying 50:4
22:3 23:12	135:19	regard 11:20	reliability 87:4
24:25	redundant	18:11,14 19:5	relied 76:17
receive 105:18	42:11 45:19	23:1 27:14	relies 85:4,9
received 146:1	54:9 74:15	28:2 43:10,22	relieved 75:2
150:3	77:12 79:10,13	44:14 55:10	remember 12:7
receives 48:11	79:16,17,25	57:11 58:20	12:10 13:4,9
receiving 72:19	80:2,3 84:5	59:1 65:21	13:10 20:3,4
rechargeable	refer 13:16	66:13 71:22,23	43:2 44:5,6
58:13	17:9 32:14	72:4,11 73:12	49:16,16 65:10
recognize	47:20 52:15	78:3 81:16,21	91:21,22 101:5
21:17,19	60:24 77:11	82:3 87:7 94:4	101:5,6,8,12,24
113:25 117:18	78:20 79:4	95:12 101:17	102:13 131:14
119:16	111:6	136:20	143:20,21
recognized	reference 60:17	regarding 16:8	147:22,23,24
130:11	75:11,12	23:12 87:10	remembering
record 6:2,12	127:20 136:4	88:25 117:10	101:9
7:13 8:20,22	referenced	140:2	remote 81:1
15:14 20:22	128:15 141:11	regards 82:2	112:20
21:16 24:9	referred 18:3	register 72:1	remotely 7:12
52:17 56:13,16	59:11 76:20	registered 74:8	116:13,14
88:13,16,19	79:2 105:2	106:13 139:1	removable
127:6,8,10,13	119:15 122:1		123:4

CONFIDENTIAL

[remove - right]

Page 30

remove 69:20 122:12	report 24:23 146:25	129:21 130:16 131:8 141:3	reversal 34:13
renesas 30:22 30:23,24	reporter 1:24 7:2 8:6 20:14	142:11,23 143:19	reverse 34:8,10 34:11 144:2
repeat 138:8	20:18 22:8,16	requirement 55:6	reversed 34:12
repeated 132:4	23:18,19,21,23	requirements 57:10,11 58:11	review 9:18 19:11,13,19
rephrase 67:23 83:10	24:3 108:9 154:3	requires 31:3 53:19 54:19,21	52:9,12 74:24 90:3 146:13
replace 114:13 122:13,23	reporting 103:22 155:1	104:24	reviewed 16:4 25:24 26:25
123:1 125:16	reports 97:18 98:5 146:1,14	reserved 5:20	28:4 52:1,2 53:14 56:20
125:24 126:1	146:21,23	respect 23:11	57:1 89:8 97:22
126:11	147:10 148:20	respective 5:5	reviewing 20:23
replaceable 109:25 122:21	149:1,11 150:1 150:4	respond 89:6 89:19	revision 42:20
123:5	represent 7:23 9:3 15:14 65:4	responded 57:18	right 15:11 16:21 22:16
replacement 75:8 89:1 95:4	142:18 143:13 148:15	response 109:2 116:5 139:6	39:6,14 53:23 54:4 59:14
96:1 107:2	representing 6:25	140:14	60:5 62:17 67:18 68:3
108:19 117:10	represents 42:24	responsible 71:6	72:12,17 73:13 75:3,8 83:22
117:12,19,20	request 50:5,8 50:10,11	rest 139:16	88:9 89:25 93:15 94:18,23
118:22 125:11	requested 69:3 84:10	restored 61:21 61:22 62:5	96:19 98:23 101:16 109:23
127:22,22	requesting 118:14	restroom 56:4 126:17	110:7,16 122:3 122:24 123:12
128:9 135:21	require 75:8 104:4 125:11	result 113:3 resulting 13:8	125:13 130:18 134:1,18 135:1
137:7 140:2	required 16:14 35:25 44:15	resume 66:24 75:1	150:17 152:8
141:23 147:14	62:15 110:6	retained 153:6	
148:3		returning 139:21	
replacements 113:8			
replacing 123:17 125:20			
126:12 132:1,6			
132:11			
replica 129:12			

CONFIDENTIAL

[rise - scroll]

Page 31

rise 108:25 risk 35:13,17 36:7,9 138:3 138:23 risks 36:14 117:11 118:21 140:2 river 33:11,12 road 2:5 8:23 rochester 2:5 role 13:19 18:22 55:19 85:15 90:22 room 12:20 roughly 75:18 102:18 rule 3:12 13:20 15:15 rules 16:13 run 14:25 125:6,10 runaway 25:4 55:14 80:8 running 68:13 82:13 124:18	safeguards 84:6 safely 135:13 safety 21:22 29:18 30:1,4 31:12 32:6,9 35:24 36:16,17 44:6,6 53:25 55:10 59:6 70:7,14 71:11 71:15 72:4,6 72:19 73:1 79:14 88:25 98:18 100:1 103:15,24,25 104:10,24 105:19 107:1 114:20,21 115:4 116:10 128:7,14,19 129:5,20 130:16 131:8 131:21 135:19 136:24 137:15 137:19,23 138:5,17 142:10,23 145:9 148:4 sale 139:24 140:10,15 sales 129:12 salina 2:18 sample 4:6 39:23	saw 73:25 78:5 86:8 136:13 saying 20:14 22:9 27:19 46:17 52:18 54:20 63:16 84:16 85:11 102:7 131:5 141:1 146:22 says 32:7 41:20 47:4 59:18 60:1 62:22 71:9 72:23 73:3 76:24 117:4 120:25 123:20 126:12 128:6 135:18 schematic 19:22 20:5,11 41:3,11,15 53:4 63:2 64:8 64:14,15,19 65:13 66:4 77:6 78:14,16 78:19,25 scheme 111:7 111:13 schwarz 2:6 3:4 7:15,15 8:19 9:1 20:10 20:13 21:10 22:6,12,18,25 23:16,20 26:4 26:7,12,14,19 37:11,18 56:7	60:13 77:23 78:5 80:13 83:10 87:23 88:4,11 90:17 90:19 105:3,25 115:16 118:16 119:19 120:4 120:12 121:9 125:18 126:3 126:13,18 127:1 128:4 133:3,18 134:1 134:8,11,17,23 135:4 139:12 139:18,20 143:10 144:19 145:11 148:6 150:19 152:19 science 9:20 scope 58:9 138:14,15,16 138:23,23 139:2 screen 6:9 15:8 15:10 16:21 20:16 21:14 26:18 89:25 105:8 108:14 119:11 127:14 133:4 135:5 139:14 142:15 145:24 scroll 15:25 26:1 58:2 119:18 120:3,8
s			
s 1:4 2:1,15 5:1 5:1 6:16 12:6 155:5 sacrifice 103:23 104:3 sacrificed 114:22 safe 61:20			

CONFIDENTIAL

[scroll - show]

Page 32

122:10 135:9 135:15 scrolled 135:8 se 70:19 sealing 5:7 second 12:6,25 20:8,18 36:23 40:10 44:9 45:16 61:19 72:25 75:5,10 76:1,21 78:10 79:11,16 80:16 90:9 114:9 132:21 134:9 seconds 47:5 74:3 secret 112:21 112:25 113:3 114:10,15 116:5 section 28:12 60:25 61:4 62:10 66:7 78:21 91:10 108:22 111:4 121:2 123:17 123:18 132:5 sections 123:21 security 112:19 113:2 see 13:22 15:10 16:23 17:4 26:2 28:14 36:24 37:3 38:21 40:2	42:21 46:10 47:23 48:23 53:15 57:12 58:4,7 65:2 75:13 76:22 77:4,6 78:14 80:23 81:6 103:1 105:8 111:2 117:15 120:1,9,14,19 121:5,11 127:17 128:1,2 133:11,12,13 135:10 146:11 150:11 seeing 121:21 seem 136:13 seems 46:17 seen 6:8 15:21 21:20 58:22 93:1 segments 89:3 self 25:17 sell 92:9 semiconduct... 10:19 send 111:14 134:5,6,10,15 134:19,21 sense 31:7,13 31:15 43:8 107:5 112:18 sensed 32:22 sensing 31:11	sensor 31:9,20 31:22 sent 26:17 71:23 74:2 135:1 sentence 62:9 separate 26:19 31:22 54:12 62:23 86:10 119:22 separately 26:20 sequela 83:1 sequence 40:11 sequences 39:25 serial 39:21 serialized 40:13 series 19:6 34:18 35:10,10 60:3,5 63:8,13 69:19 70:5 76:9 86:24 88:22 94:13 104:11 112:1 117:7 140:1 142:20 146:3 147:6,7,9 serve 41:14 set 47:6 72:2 73:5 79:6 84:9 154:8,17 sets 71:11	setting 73:12 settings 124:18 seven 16:8 38:8 139:22 142:2 several 14:2 26:16,23 27:15 34:23 93:24 shape 142:24 144:6 share 15:8 21:12 26:8,14 26:21 108:13 127:14 132:24 133:1,5,11 139:14 142:15 sharing 80:21 sheet 155:1 sheets 65:23 sheridan 2:14 shoot 134:14 short 35:25 36:3,20 56:14 59:4 70:7,16 70:23,24 88:14 127:11 145:19 shorter 123:10 124:7 shorthand 154:3 shorting 70:20 show 21:8 108:14 117:3 119:9 127:15 142:16 143:11
--	--	---	---

CONFIDENTIAL

[showing - specification]

Page 33

showing 20:15 51:13 63:2 shown 141:21 shows 51:9 122:12 shut 48:14 50:22,24 51:7 51:16,16 55:17 61:15,16 62:5 66:16 68:6 70:8 72:9 74:20 75:1 76:11 80:9 82:9 84:23 87:1 shutdown 62:7 72:10 104:1 shuts 61:21 68:6,6,9 69:13 shutting 68:5 side 38:14 50:2 signal 37:23 71:23 72:14 signature 154:22 signed 5:11,14 significant 96:8 96:25 104:16 115:1 130:11 130:12 similar 13:1,3 28:3 38:13 73:25 76:10 93:21 98:16 111:25 112:18	112:24 117:7 123:3 136:13 137:9 similarly 67:1 simple 112:7 simplistic 109:18 110:11 110:18 simplistically 38:14 simply 107:17 single 10:25 40:19,19 sit 151:6 sitting 151:5 situation 83:15 84:19,25 85:24 six 15:16 16:3 90:25 95:2,24 96:8,23 97:1 104:15 106:21 145:25 size 143:8 144:6 skip 59:17 123:14 slightly 29:8 smart 42:5,19 43:1,3,14 44:3 44:7 54:14,19 54:21 smbus 38:20,24 38:25 39:14,16 39:23 40:7 45:8 49:17	52:23 smd 38:20 45:1 smiling 139:18 139:20 smith 2:12 8:1 smoke 38:16 sold 17:2 22:23 88:22 91:13 94:13,22,24 95:3 96:1 solely 47:23 solutions 115:24 sony 149:17 sorry 22:8 23:20 27:22 28:19 34:10 45:3 49:18 52:20,22 53:5 53:14 55:18 64:24 67:19 72:15 80:11 83:18 86:3 89:16 92:25 93:9 94:9,24 102:5 117:23 119:16 121:7 129:16 130:6 137:16 138:7 149:3 152:8 sort 47:11 61:20 73:4 83:1 92:8 96:13 109:18 110:11,18	sound 88:7 sounded 80:15 sounds 88:9 127:3 source 68:1,1 69:21 76:7 128:22 south 2:5 sovik 2:12 8:1 space 25:17 speak 21:4 44:5 44:6 87:15 109:22 speaking 23:24 spec 20:3 81:14 special 89:20 specific 24:23 24:24 25:18 51:25 52:4 101:6,8,12 123:19 128:19 128:19,23,23 143:4 152:13 specifically 10:19 25:7 51:18 71:4 82:2 91:16 101:5 111:11 118:24 119:3 123:20 149:23 specification 3:16 19:14,15 19:25 27:3 28:4,8 29:7 42:20 43:15
---	---	--	--

CONFIDENTIAL

[specification - switch]

Page 34

44:4 57:5,9,12 57:15,16,17,24 58:10 59:2 70:3 74:1 81:15 93:18,21 94:4,7 108:23 specifications 3:18 28:13,16 28:23 46:5 56:22 speculation 53:19 speed 113:21 spell 12:3 100:20 spoke 90:6,7 129:16 square 121:21 stamped 3:17 3:19,21 4:7 150:10 standard 39:23 42:5,6 43:1,3,3 46:1,4 54:15 54:19 103:24 103:25 standardization 43:16 standardize 43:10 standardized 110:9 standing 152:5 standpoint 116:18	staples 1:11 2:17 6:21 7:23 148:10,15 150:23 151:17 152:3 155:3 start 16:18 29:9 120:13,24 137:17 started 10:5,10 starts 48:20,21 133:9 state 1:25 7:9 7:12 8:16,20 8:22 49:9 77:1 98:2 154:4 statement 37:15 57:4 states 1:1 6:22 21:21 status 71:12,15 72:4,6,19 73:1 stay 139:16 stealing 114:6 step 111:18 stephen 2:6 7:15 steps 137:21 steve 9:1 22:4 37:4 115:7 121:7 125:15 126:19 128:3 133:1 145:16 stipulate 126:9 stipulated 5:3 5:18	stipulating 126:4 stop 23:21 50:16 76:6 80:21 86:1 114:6,7 stops 74:5 store 110:4 street 2:10,18 structure 143:17,18 structured 40:15 studied 97:13 98:17 99:13 study 98:13,20 99:7,8 114:19 128:16 studying 97:5 97:19 subject 11:9 17:12 143:15 150:7 152:3 submitted 57:6 93:21 subscribed 153:14 155:21 subsections 14:9 substandard 92:13 sudden 139:5 sugnet 2:12 suite 2:5,14,18	summarize 11:11 supervision 82:19 supplied 58:12 suppliers 88:25 suppose 35:22 supposed 34:7 65:21 140:12 142:2 sure 13:10 20:10 25:6 30:20 36:4,13 41:11 48:17 51:11,15,18 52:11,11 53:17 54:5,6 55:1,3 56:10 72:8,22 83:17 86:4 87:5 88:6 109:19 110:12 111:12 113:24 120:4 126:18 128:18,24 133:3 138:1 139:6 147:25 149:8 150:15 surpasses 72:24 suspicion 147:1 swear 8:7 switch 47:12 56:4 73:5 139:12
---	---	--	--

CONFIDENTIAL

[sworn - terms]

Page 35

<p>sworn 5:12,14 8:15 153:14 154:8 155:21</p> <p>synonyms 10:23</p> <p>syracuse 2:18</p> <p>system 17:1,17 17:20 27:17 42:9 45:19 48:19 51:19,20 51:21,22,23 52:2,21 53:18 54:9,14 58:14 58:15 63:19 64:16 68:1 70:14 71:6 72:12,21 76:10 76:18 77:18 80:17 81:2,19 82:8,18 85:23 85:23 86:14 87:2 96:19 100:22 111:21 111:25 112:5,6 112:11 113:12 113:19 114:1 114:16 116:4,5 144:23</p> <p>systems 18:23 58:21 75:17 78:12 84:5,21 89:21 103:4 108:16 109:4 109:17 111:2 112:17,22,24</p>	<p>113:20 115:4 115:22 116:6</p> <p>t</p> <p>t 2:19 5:1,1 12:5,6 50:15 154:1,1</p> <p>table 37:20 119:23</p> <p>tack 118:12</p> <p>taiwan 9:4,5</p> <p>take 6:10 9:15 56:3 72:20 86:1,18 87:25 88:2 89:2 99:1 114:12 120:7 122:22 123:10 133:20 137:21 138:25 145:11</p> <p>taken 1:22 5:16 6:15 56:14 69:7 88:14 101:18 127:11 145:19</p> <p>takes 120:19</p> <p>talk 67:24 68:5 93:3 95:23 109:3,16</p> <p>talked 39:6,13 40:4 41:22 44:1 47:16 59:2 74:13,22 75:15 82:21 94:15 100:13 100:17 101:10 101:13 104:2</p>	<p>109:23 136:21 137:12 146:11 150:23 151:17 152:3</p> <p>talking 20:15 20:24 22:16 44:11 50:12 51:21 62:2 67:25 70:13 71:21 72:10 73:4 82:3 89:13,24 92:8 92:17 95:11,19 105:21,23 106:1 115:11 115:23 116:4 117:21 118:10 118:25 125:6 130:15 148:24 149:22 150:8</p> <p>talks 46:8 73:11 125:5</p> <p>tarallo 2:16 7:23</p> <p>teagan 2:6</p> <p>team 110:2</p> <p>technical 37:7</p> <p>technically 76:3</p> <p>technological 116:18</p> <p>technologist 9:12</p> <p>tegan 7:17</p>	<p>tell 9:10 14:4 14:21 18:22 33:7 81:11 132:20 143:7 151:8</p> <p>tells 39:22 40:18</p> <p>temp 46:25 54:25 72:25</p> <p>temperature 31:7,8,13,15,20 32:2,17 33:23 33:25 41:23 44:24 45:7,20 45:20 46:9,12 46:13,18 47:19 48:12 49:3,8 50:17,20 51:9 53:13,16,22 71:1,7,11,22 72:3,24 73:6,7 73:18,22 74:2 74:4,8 86:12 86:19 116:21</p> <p>temperatures 73:22</p> <p>term 25:3,6 41:12 52:16 116:23 122:18</p> <p>terminals 68:24</p> <p>terminology 69:6 121:16</p> <p>terms 149:22</p>
---	---	---	---

CONFIDENTIAL

[testified - timeframe]

Page 36

testified 8:17 11:2,10,22 13:14 145:2 147:16	thermal 14:8 14:12 25:4 55:14 80:8 104:1	59:9 62:12,25 63:1,23 67:12 70:16 76:3 77:7 85:2,19 90:10,11,24 92:18 94:9,11 95:7,10 106:17 106:20 107:5 108:6 115:11 116:14 119:3,5 119:20 120:20 125:21,25 126:22 128:20 129:9 130:8,8 130:23 131:22 132:18 133:10 134:1 136:17 139:4,6 140:21 140:23 141:15 143:8 145:2 146:17,20,20 146:25 147:1 147:22,23,24 148:25 150:11 150:17,18,19 152:16	102:3 103:17 147:19 150:24 thought 80:14 126:21 three 27:23 35:9 60:2,6 80:25 87:7,11 87:16 97:10,14 97:16 threshold 33:25 ticky 118:12 time 1:23 5:20 7:9 10:5,5 18:20 21:13 26:12 39:25 40:18 55:23 56:12,15 60:18 73:1 88:12,15 94:25 96:6,7 103:7 115:6,13 125:6,10 126:16,25 127:9,12 128:18,25 129:6,22 130:11 131:4 131:23 136:10 136:21 138:2 138:11,13 145:17,20 152:22 timeframe 115:7 116:2
testify 23:10 25:12 81:9 140:13 146:7 151:5 testifying 126:6 testimony 56:19 118:2 129:8 130:2 140:19 154:10 texas 9:21 10:2 10:8,9,13,18 30:15 62:21,24 63:18 64:22,25 71:5 79:5 text 125:13 thank 20:13 23:17 25:1 26:3 28:10 36:22 37:18 56:10 58:7 60:9 62:1 64:24 70:1 78:6,9 83:11 90:17,20 118:16 121:5 134:11 135:6 145:16 149:20 150:13 152:20 152:21 153:1 thanks 121:10	thermistor 31:9 31:9 34:3 41:21,22 42:11 44:12,17,23 45:11,11,14,16 48:2,11 49:2 50:17,21 51:8 51:13 52:24,25 53:1,7,8 54:6,9 54:11,22 55:7 55:11,15 74:8 74:13,15,19 86:10 thermistors 42:4 45:18 47:17 53:20 54:2 thing 29:22,24 29:25 56:6 67:8 85:12 95:8 133:9 things 43:10 44:1 60:14 82:23 141:16 think 12:4,23 14:20 15:4 17:10 20:3,11 22:19 27:5 40:22 41:17 50:12 52:10 54:24 58:23,23	59:9 62:12,25 63:1,23 67:12 70:16 76:3 77:7 85:2,19 90:10,11,24 92:18 94:9,11 95:7,10 106:17 106:20 107:5 108:6 115:11 116:14 119:3,5 119:20 120:20 125:21,25 126:22 128:20 129:9 130:8,8 130:23 131:22 132:18 133:10 134:1 136:17 139:4,6 140:21 140:23 141:15 143:8 145:2 146:17,20,20 146:25 147:1 147:22,23,24 148:25 150:11 150:17,18,19 152:16 thinking 52:20 89:11 104:15 third 12:7,8 40:7 79:6,8 88:24 91:6 92:13,25 93:1 93:3,8,9 94:21 95:9,9,15,16 96:9 100:8	

CONFIDENTIAL

[times - under]

Page 37

times 11:5,7 92:18 103:7,8 title 9:12 10:16 titled 28:9 today 9:2 11:3 15:22 19:18 26:25 44:2 56:20 57:2 60:21 81:9,13 89:7 99:2 117:17 130:2 140:13,21 141:2 146:7 148:8 152:17 today's 153:3 together 38:6 43:9 told 59:25 90:8 tools 123:1 topic 16:16,20 18:14,16,17 19:5,9,20,21 21:1,2,7 22:7 22:10 23:1,3 49:20 80:23,25 81:8,12,21 85:21 87:7,10 87:16,19,21 88:18 89:7 91:3,7 99:15 101:25 103:20 108:14 117:2,4 118:2 119:15 139:22 141:2 142:2 145:22	145:25 146:6 146:10 topics 16:3,5,9 16:13 121:4 140:12 total 85:6 153:5 trade 58:20 transferred 40:20 transistor 47:8 transmit 86:9 transmits 48:2 transmitted 40:8,10,11 42:2 44:25 86:13,19 trial 1:21 5:20 trouble 101:9 true 43:7 124:10 154:9 try 12:4 43:9 134:19 trying 12:11 50:21 72:5 81:22 92:9 101:4,6,8,11,12 126:23,24,25 128:20 131:3 turn 36:23 46:6 48:4,6 50:15 53:2 60:10 70:2 90:2 108:21 148:9 turned 61:15 66:24 67:9,10	67:13 69:8 73:8 74:5 142:9,22 turning 121:13 139:5 turns 47:5 72:14,15 two 13:4 16:20 18:14 19:17,20 21:1,7 22:7,21 38:5,8 39:16 39:20 42:4 45:17 47:5,16 53:20 54:22 56:3 60:4,4,4 62:3,23 63:17 65:4 72:25 74:3 84:5 89:2 96:13 97:14,14 97:16,17 123:20 125:1 137:8,9 138:11 138:12 141:21 151:21 type 13:3 59:18 61:20 111:13 112:4,5,10 113:2,19 114:16 116:3 127:21 142:19 152:4 types 10:17 28:17 40:9 43:17 59:6 103:3	typo 27:8 u u 5:1 12:5 u2 65:3 u3 65:3 ultimate 129:11 unapproved 95:9,14 unauthorized 93:10 94:20 95:14,25 96:13 96:22 97:5,11 97:19 98:9,14 98:17 99:8,12 99:25 102:4,16 102:22 103:3 103:16 104:9 105:10,18 107:18 112:12 114:19 118:21 129:4 130:18 131:7,19,20 132:11 136:23 137:7,13,19,23 138:5 142:9 144:5,15,22 147:15 148:3 unaware 99:11 131:6 uncontrollable 25:16 under 25:10 31:6 37:9 42:17 49:11
---	---	---	---

CONFIDENTIAL

[under - voltage]

Page 38

51:7 58:9 59:17,18 60:1 61:14 62:11 66:9 75:10,16 81:24 82:1 85:20 94:14 114:16 123:9 127:23 132:4 135:11,12 undercharge 32:16 59:3 underneath 30:6 understand 16:12 17:8,14 17:16 23:16 25:8 37:11 40:3,22,24 41:4 50:14,22 52:14 55:9 61:13 65:11 77:5,7 85:11 89:10 96:12 102:10 110:25 112:23 117:24 124:3 125:14 140:8,18 141:6 142:4 149:3 151:20 understanding 36:15 48:25 50:13 54:8,16 63:21 74:7,19 77:22 79:9 86:23 111:3	118:4 129:10 132:20 136:6 understood 100:10 118:14 123:21 undetectable 116:23,23,25 uneducated 118:10 unit 6:13 58:16 58:16,19 59:8 59:10 63:25 91:10 99:3 united 1:1 6:22 21:21 units 60:2 105:15 153:5 universal 110:9 use 18:11 38:16 56:3 57:6,19 63:7 88:22 91:13,23 93:25 98:9,19 100:7 107:18 112:13 112:19 113:12 122:16 123:23 124:22 128:7 135:19 137:7 used 24:12 41:4 41:5 42:25 58:20,23 60:8 67:12 77:1 79:11 90:23 93:20 96:1,14 102:23 107:2	109:14,20 110:13,20 113:3,5,8,14,18 122:7 123:18 142:20 153:5 useful 123:22 124:23 user 3:20 39:9 90:1 105:16 119:13 121:14 122:21 127:15 127:21 136:22 144:14,22 users 89:14 uses 104:16 using 69:5 99:25 111:13 112:21 117:11 118:21 120:25 127:23 135:12 usually 11:12 utilize 127:22 utilized 112:24 v v 155:3 vague 25:6 129:9 vaguely 22:3 96:5 131:10 value 71:17,20 71:21,22 86:19 values 73:18 variations 27:25	varies 124:17 various 40:4 66:15 86:22 109:10,17 venued 13:12 verbal 109:2 verify 41:10 veritext 7:1,3 26:15,20,22 153:6 155:1 version 3:18 56:23 63:4,6 78:16 93:17 115:12 versus 6:21 95:9,15 video 6:10,14 37:16 152:25 videographer 2:23 6:1 7:1 8:6 20:20 56:11,15 88:12 88:15 127:9,12 133:4 139:13 145:17,20 153:2 view 95:13 virtual 1:17 virtually 6:5 130:8 visualize 12:11 void 103:21 volt 51:21 voltage 33:1,4 33:8,14 35:11
--	---	--	--

CONFIDENTIAL

[voltage - x]

Page 39

35:12,16,20,21 59:5 62:10,11 62:12,15 66:9 66:10,15,23 67:4 69:3 73:12 79:17,18 79:21,22,24 80:4,5 83:20 84:7,8,8,10,14 85:1,5,6,13,14 85:16 voltages 34:18 77:14 voltaging 35:5 volts 69:2 volume 138:23	121:16 123:14 123:16 130:19 134:7 141:13 143:16 145:12 151:22 wanted 44:13 86:17 112:11 warn 108:18 139:1 warned 137:7 warning 98:18 127:24 128:6 132:4,9,12 135:17 136:2 136:20,21 137:23 141:11	145:9 146:16 154:14 ways 109:10 we've 137:8 website 26:21 141:24 went 83:11 western 1:2 6:22 whatsoever 95:3 whereof 154:17 williamsville 2:14 winton 2:5 withdraw 73:20 86:7 97:3 105:5 106:10 132:2 136:19 137:16 144:11 witness 3:3 6:8 8:7 13:16,16 13:20 27:7 56:5,8 78:1 88:8 90:20 98:6 115:14 119:6 120:16 120:23 125:19 126:15 127:4 133:7 141:2,18 145:13 150:17 150:21 153:1 154:7,10,17 155:4	word 67:13 121:24 words 10:14 18:18 38:1 39:3 64:6 69:7 82:6 83:3,23 99:22 102:19 116:17 131:18 136:8 138:22 141:12 work 10:12,17 18:15,19,24 27:16 38:2 63:23 64:2,6 69:23 90:12,16 96:18 99:6 102:20 104:25 110:13 137:14 137:20 138:4 worked 15:4 working 91:4,5 works 100:24 write 97:18 written 76:3 118:23 124:13 124:14 129:7 129:23 131:5 131:23 wrong 69:5
w	warnings 117:5 117:13 128:16 138:1,2,11 139:25 140:4 140:10,15,17 141:20,21,23 warren 1:22 8:14,21 153:11 water 33:10 way 19:25 48:13 50:24 54:2 60:12 75:16 89:20 94:11 109:18 113:7,11 116:14 120:10 129:11 132:23 139:16 141:10 144:10,14		
waived 5:9 wanemaker 2:15 7:25 8:1 26:1 56:2,10 88:10 want 16:19 21:8 22:20 24:10 25:21 28:11 42:15 46:6 55:25 58:1,5 60:10 60:18,24 61:2 62:16 70:2 75:17 80:21 87:19,25 88:1 89:22 95:10 99:21 108:21 117:1 120:7,13			x
			x 1:3,13,16 3:1 4:1

CONFIDENTIAL

[yeah - zone]

Page 40

y
yeah 67:22 78:5 88:8 101:11 112:23 119:19 125:19 126:1 130:21 135:4 138:10 141:18 143:20 149:1 150:12
years 9:14 90:5 90:5,7,25 95:2 95:24 96:8,23 97:1,10,16,17 100:14,14 104:14,15 106:22 125:3 129:25 138:13
york 1:2,25 2:5 2:14,18 6:23 8:16 9:5 154:4
yup 150:21
z
zero 40:14 46:14 zhongli 8:23 zone 152:22

Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

Veritext Legal Solutions complies with all federal and State regulations with respect to the provision of court reporting services, and maintains its neutrality and independence regardless of relationship or the financial outcome of any litigation. Veritext requires adherence to the foregoing professional and ethical standards from all of its subcontractors in their independent contractor agreements.

Inquiries about Veritext Legal Solutions' confidentiality and security policies and practices should be directed to Veritext's Client Services Associates indicated on the cover of this document or at www.veritext.com.